



FRIDAY, FEBRUARY 21, 1879.

## Contributions.

## The Big Tunnel on the Dom Pedro Segunda Railroad.

No. 123 N. BROADWAY, BALTIMORE, Md.,  
Feb. 15, 1879.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Allow me to correct a slight inaccuracy in your valuable *Gazette* of this week upon the Big Tunnel in Brazil. I am sorry on Mr. Roberts' account that he could allow himself to speak in such a manner.

The fact is the Big Tunnel on the Dom Pedro Segunda Railway was not completed under the contract of Roberts, Harvey & Co.

The Emperor Dom Pedro Segunda was not on the tunnel the day the tunnel went through from the shaft to the west end, nor for many months afterward. And Mr. Boyd never was a manager on any part of the Big Tunnel.

I think I am correct, as I was the Superintendent of the Big Tunnel on the Dom Pedro Segunda Railway at the time, and I am the only man that took the Emperor down the shaft.

I attach little importance to the above, only I think facts ought to be stated.

JOSEPH PATTERSON.

## The Use of Iron Cars.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Some twenty years ago the New York Central & Hudson River Railroad Company added to their rolling stock 500 iron box cars, the floor framing being of six sills of riveted channels, and the box of  $2 \times 2 \times \frac{1}{4}$  angle irons, covered with iron  $\frac{1}{8}$  of an inch thick. The bodies were all iron, excepting the floor and a lining some three feet high. These cars after twenty years' use are to be found upon the main line and its connections, in apparently as good condition as when new. Occasionally there is one with a small patch in the side where the iron has rusted through. Notwithstanding this good service, a number of minor officials and employees of this road persist in condemning iron cars in general, and invariably say: "Our company built 500 of them twenty years ago, and have not built any since; therefore they are good for nothing." Now let us ask the reason thereof.

If these cars, built at a date when the knowledge of iron construction was in its infancy, will pass through twenty years of service unharmed, is it not safe to conclude that, with the improved shapes of iron at command, together with the experience developed by the greatly increased use of iron in bridges, buildings, etc. where it is superseding wood daily, that a car possessing the essential requirements of good rolling stock, viz., lightness, strength and durability, with easy access to wearing parts, and lastly, and probably one of the most important qualities, cheapness of manufacture, may be produced? Possibly the true reason for this animosity to iron cars in general by these gentlemen is that, as a class, they are men unskilled in the construction of iron, their experience being confined to wood, and that it is but natural they should give preference to a form of building with which they are familiar, and condemn any innovation in their branch of work that would necessitate either their learning what would be comparatively a new profession, or being superseded by men who possess such knowledge.

BUFFALO, N. Y.

KELLOGG &amp; SEAVER.

## The Paris Exhibition—France—Electricity in Railroad Engineering.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Considerable progress has been made of late toward the perfecting of railroad signals, called out by the introduction of the block system of working the railroad traffic. Considering the importance of the subject, the new inventions, at the Paris Exhibition, for perfecting the signal systems should have special interest to railroad managers. English skill was represented by the Saxby & Farmer apparatus, already described in these pages,\* which combines the interlocking with the block systems. France has produced the electro-semaphores of Messrs. Lartigue, Tesse and Prudhomme; and America, although possessing some new inventions in this branch, failed to present to the world her discoveries, which are yet entirely unknown in Europe.

The block system has gained ground constantly on both sides of the Atlantic, and will, it is to be expected, be universally adopted on all important roads, with advantage to the public as well as to the railroad companies; but it may take a long time before the accomplishment of this end; and in the meantime it is the duty of every railroad manager to study the theory and the various appliances which tend to the perfection of the block system.

The electro-semaphores are, at present, the most perfect of the known European contrivances for this purpose, and will serve as an excellent example for the study of the requirements of the new system.

From the origin of railroads, the protection of moving trains by an interval of space has been thought of. In 1843 an English engineer, Cooke, pronounced every point on the road to be dangerous, unless protected by a distant signal;

\* See *Railroad Gazette* of Oct. 13 and 20, 1876.

and he thus stated the first principle of the "block system." What this principle is was explained in these columns, in the articles already referred to, but for the sake of completeness it may be said here that the block system consists in dividing the road into sections, and permitting only one train at a time to occupy a section. This is, however, what is known as the absolute block system, and differs from the permissive block system in this respect, that, in the latter, when a train approaches a signal-post which indicates danger, it does not stop, but proceeds cautiously farther on, being prepared to stop at the distance at which a train in advance may be seen. The permissive block system has been devised to overcome some objections which are made to the absolute block system, namely, that a train standing still by a signal-post is not sufficiently protected, unless there is a distant signal manipulated from this post; and that in case of the apparatus being out of order, or the attendant neglecting his duty, an unnecessary and long delay may take place, until the traffic is restored again. But, as it may be difficult to see a train at a sufficient distance ahead in the darkness, in fog or storm, some of the roads have adopted

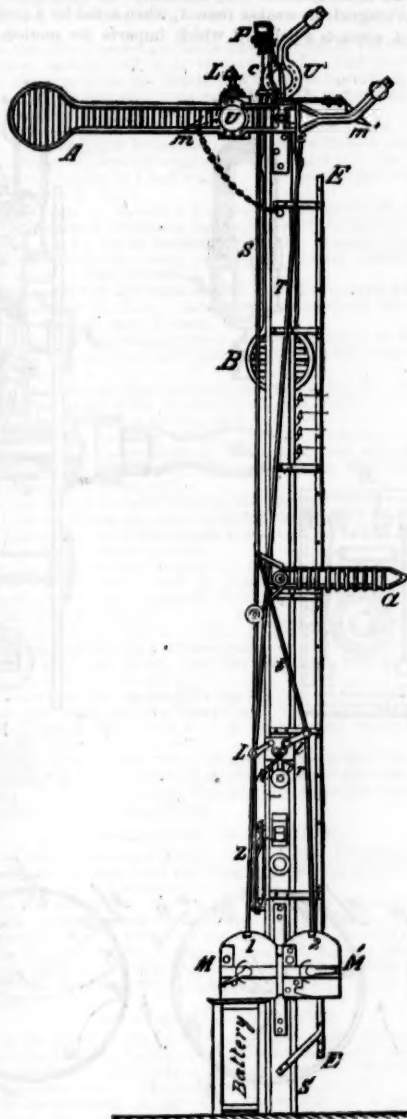


Fig. 1.

the plan of having a train wait five or ten minutes before a signal set to danger can be passed by it, thus securing safety still better, but diminishing somewhat the number of trains that can be run over the road. The lengths of the sections into which the road is divided vary with the amount of traffic; the shorter they are, the more trains can be dispatched over the road in a given time.

The ordinary telegraph at stations was used in the beginning of the introduction of the block system for signaling the trains; and is used also now on roads with small traffic (in Holland, for instance, where the block system was made compulsory by a government decree in 1875); but it is evident that mistakes and delays are thus made inevitable, and that special appliances must be employed especially on roads with heavy traffic and frequent trains. Electricity is always the principal agency in working the block system, and it could not be dispensed with in working the signal system any more than in the ordinary telegraph service.

The appliances used for this purpose can be divided into two distinctive groups:

1. Those which are independent of the road signals, which are used only to communicate between the attendants of two neighboring signal points, giving orders that have to be executed by the man who receives them.

2. Those which act directly upon the road signals, without the intervention of an attendant, or, in other words, act automatically. To the first belong the appliances of Cooke, Clarke, Regnault, Tyer, Preece, that of Saxby & Farmer (which unites the block with the interlocking system), and others; to the second belong the systems of Siemens &

Halske, of Lartigue, Tesse & Prudhomme, in Europe, and of Hall and Rousseau in America.

The systems of Messrs. Lartigue, Tesse & Prudhomme, better known as the electro-semaphores, was exhibited at the Exhibition, in working order, for a single and for a double-track road. It is already in use on the Northern Railroad of France, and on the Paris & Orleans Railroad.

A statement of the essential conditions for the realization of the block system, one that has been fully obtained by the apparatuses in question, is thus given by its inventors:

1. Solidarity of the electric instruments, which send and receive signals from the distant posts with the road signals; consequently, unity of manipulation, not admitting of any confusion in the nature of the signals produced.
2. The manipulation limited to a single movement for each signal.
3. The least possible use of electricity; signals to be set to danger behind the trains mechanically, without its intervention, its action being limited to announcing the approach of a train to the subsequent station and to setting the danger signal of the post behind to safety; should the electricity refuse to act the signals to be held at danger, which may for the time retard the traffic, but in no case can be the cause of accident, and never indicating "line clear" when the line is blocked.
4. Immediate control of all the electric signals, which are sent by an automatic signal, which the attendant receives in return as soon as the signal sent has been actually produced at the corresponding post, and not until then; the permanence of this sign of reception enables the attendant always to know, not only the state of his own post, but also the position of signals of the two posts with which he corresponds.
5. The impossibility of releasing the signal which blocks the entrance to a section without the intervention of the attendant at the other extremity of this section, who, by the arrival of the train announced, is certain that the section is actually clear. This reduces the time strictly necessary to block a section, which is set clear as soon as the train has left it.
6. On a single-track road, the impossibility of setting the signal to safety at an extremity of a section without first absolutely blocking that section at the other extremity, which is accomplished by only one movement and without the intervention of the attendant at the corresponding post. During the whole time that a section is blocked at both extremities, that is, when a train occupies a section on a single-track road, the impossibility of sending new signals which could confuse the attendants.
7. The simplicity and uniformity of the electric apparatuses, so arranged as to present a perfect solidity and to be least liable to get out of order, requiring thus but very little attention, and enabling the guards usually employed, men or women, to operate them.
8. The announcement by an acoustic signal of the production of every electric signal sent by a corresponding post.

The realization of these conditions is accomplished by dividing the road into sections, and placing electro-semaphores at their termini. Fig. 1 of the accompanying engravings represents an electro-semaphore for a double-track road. It consists of:

Two large semaphore-arms, A and B, 6 ft. 6 in. long, placed on an iron post, over 25 ft. from the ground; one of them is for the up and the other for the down track; their faces are painted red. Only the arm on the right-hand side of the post is the signal to be observed by the train. The post and the arms are of a skeleton construction, and presenting a small surface against the wind. T is a rod which connects the arm with a crank of the apparatus M. A horizontal position of the arm indicates danger, and vice versa. A single lamp, L, inclosed in a square case with a glass on each side, serves for signaling at night; the light is seen from the side represented by the engraving, through the red spectacle glass U of the arm A, when this is in a horizontal position; from the other side, through the spectacle glass U' of the arm B; from the third and the fourth sides the light is reflected to the lower portion of the post, from two mirrors, m and m', at the top, placed at an angle of 45° from the horizontal line. The lamp is hung on a chain, c, which passes over a pulley, P, fastened to a lever, Z, with a movable hook and a counterweight, to keep the lamp at a constant height.

Two small arms, a and b (b being in a vertical position and behind the post is not seen in the figure), are signals for the attendant only, and serve to announce a train to him. They are placed half-way between the large arms and the ground. A rod, t, connects the arm a with a crank of the apparatus M'. The rods T t are guided by levers or rockers, L l, to facilitate the transmission of the movement from the cranks to the arms, and to use this movement for giving an audible signal, whenever an arm is liberated, by briskly pulling on two hammers, R r, which strike a bell. This is shown on a larger scale in fig. 11.

The large semaphore arms, when left free, that is, when the electric apparatus does not act on them, take the vertical-down position, and are said to be "liberated." To place them horizontally, and keep them in that position, a force must be exerted on the rod T, and the arms are then said to be "attracted." The small semaphore arms, when liberated, have the horizontal position, and the vertical position when attracted. A ladder, E E, gives access to all parts of the semaphore.

Four electric apparatuses (only two of which, M, M', are seen in the figure, the other two being on the other side of the semaphore) serve for manipulating the four arms. They are supplied with an electric current from a battery placed at the foot of the post, and are



connected by telegraphic wires with the neighboring signal stations.

The fundamental principle on which they are constructed is the action of the "Hughes magnet," which is represented in fig. 4. This is an ordinary magnet in the shape of the letter U, whose two branches, *N*, *S*, end with soft iron cores surrounded with bobbins, *E*, *E*, through which an electric current can be sent. Should there be no current, the cores which form the poles at the magnet will attract a weight, *P*; but if a current is passed through the bobbins in the direction contrary to that which is produced by the magnet, then the attractive force will be weakened, and consequently the weight will fall down.

The action of such magnets is employed here to attract the semaphore arms; it is destroyed by means of electric currents sent from the neighboring signal posts to release or to liberate the semaphore arms.

The large arm when in a horizontal position is attracted by the magnet; it cannot be liberated except by the action of the electric current sent from the subsequent post. When in a vertical position the electric current does not act on it at all; and from this position it can be changed to horizontal by the attendant, by means of a crank. The small sema-

aphore arm is down), and the other at  $210^\circ$  from it (when the semaphore arm is horizontal).

On the shaft *X* is also fastened a finger, *D*, fixed at an angle of  $150^\circ$  to the crank *B*; a spiral cam, *C*; and a disk, *O*, of a non-conducting material.

Two prismatic levers, *J* and *r*, forming a constant angle with each other, are attached to another shaft, *F*—the lever *J* being in the plane of the cam *C*, and the lever *r* in the plane of the finger *D*. The lever *J* carries on a rod, with a screw thread on it, two regulating weights, and is provided with a hook, *d*, to which a vertical rod, projecting from the bottom of the box, can be attached, serving to liberate the apparatus by hand. This last arrangement is used only on the apparatus for the small semaphore arms. The lever *r* is connected with a stop, *P*, which, being in the plane of the finger *D*, prevents its passing the second fixed position, namely, when the crank *B* is at  $210^\circ$  from the vertical. At the bottom of the lever *r* is a pallet, *p*, of soft iron, attached to it by means of a spring; this pallet opens and breaks contact with the poles of a strong Hughes electro-magnet, *A*, when the latter is acted on by a negative current. Another electro magnet, *R*, weaker than *A*, when acted by a positive current, attracts a pallet, *J*, which imparts its motion to a

All communications and parts of the apparatus which should be insulated are attached to a plate, *N*, fixed on the wall of the box.

The various parts of the electro-semaphores being now described, the effects produced by the movement of the crank remain to be studied. The two electric instruments which serve to manipulate the signals for each of the tracks are numbered.

(See fig. 1.) No. 1, apparatus for the large, upper, semaphore arms, and No. 2, apparatus for the small, lower, semaphore arms. Apparatus No. 1 of one post communicates with the apparatus No. 2 of the next post by the telegraphic wire. When no train is on the line, the large arm is in a vertical position and liberated from the action of the electro-magnet, and a current from the line-wire does not act on it; the small arm is in a vertical position, too, but attracted by the magnet, and a current from the line-wire can place it horizontally, and liberate it from the action of the magnet. The position of the crank *M* (fig. 3) of the apparatus No. 1 will then be horizontal and correspond with the disk-commutator's (*O*) first, fixed position, shown in fig. 5; the position of the crank *M* of the apparatus No. 2 will be at  $210^\circ$  from the horizontal, and correspond with the third,

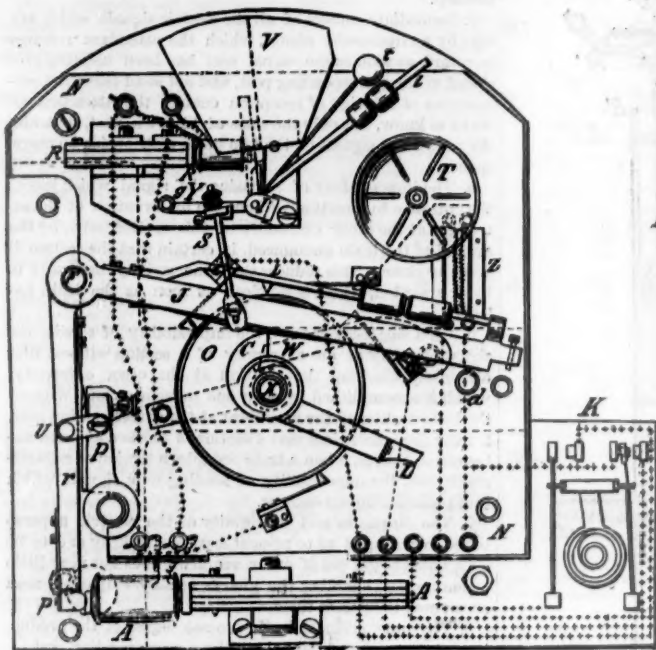


Fig. 2.

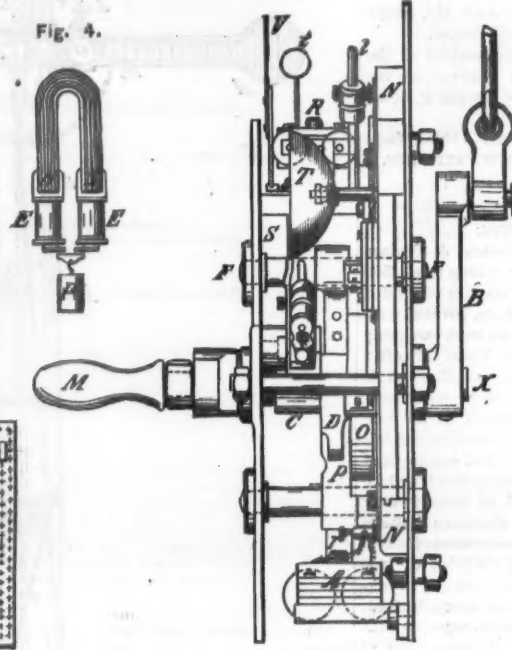


Fig. 3.

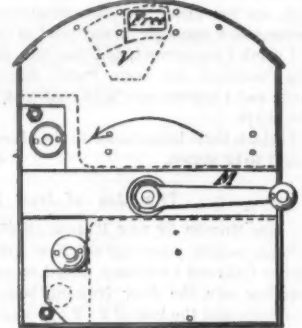


Fig. 9.

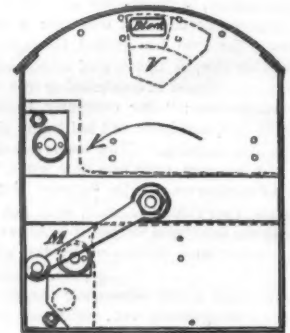


Fig. 10.

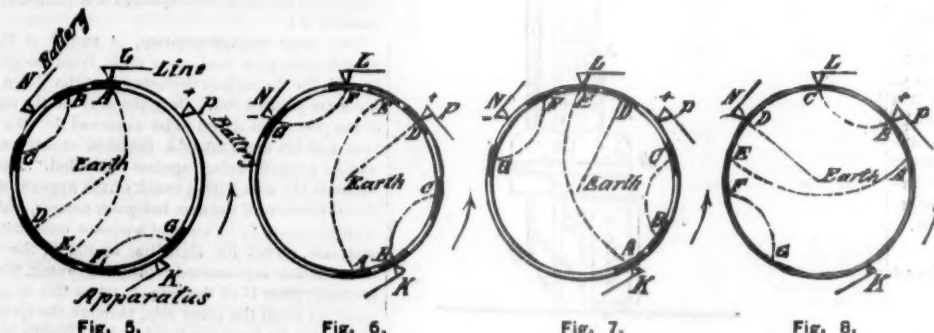


Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

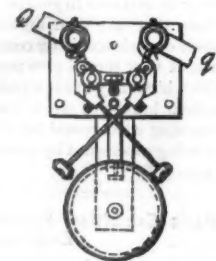


Fig. 11.

phore arm in a horizontal position is liberated from the action of the magnet, and the electric current from the antecedent post does not act on it. If in a vertical position it is held by the magnet, and cannot be moved by the attendant, but only by the electric current sent from the antecedent post.

There are, therefore, two kinds of actions to be produced at a post, connected with a passage of a train.

Mechanical action, namely, (1) placing of the large semaphore arm in a horizontal position, to protect a train which has entered a new section; (2) moving of the small arm to a vertical position, to destroy the announcement "train on line" from the antecedent post.

Electro-mechanical action, namely, (3) liberating the small arm, and thus placing it horizontally, at the subsequent station, to announce "train on line;" (4) liberating the large arm, thus placing it in a vertical position, at the antecedent post, to open the free section.

As the actions (1) and (3) should be made first, they are, therefore, produced from the same apparatus, *M*, and the actions (2) and (4) from the other apparatus, *M'* (see fig. 1). Both of these are identical, and their construction is shown in figs. 3 and 4.

On a shaft, *X*, *X*, are fixed two cranks, *M* and *B*, projecting on the outside at a box which encloses the apparatus; one of them, *M*, is provided with a handle, to be moved by hand, and the other, *B*, is connected with the semaphore arm by the rod *T*; the two cranks form an angle of  $90^\circ$  with each other. A detent, *W*, opposes the rotation of the shaft to the right, acting on a ratchet which determines two positions of the shaft: one with the crank, *B*, vertical (when the

target, *V*, to a rod carrying a counterweight, *l*, to a bell-hammer, *t*, and to a bar, *Y*, carrying a soft iron pallet, *g*. This whole system is pivoted on the same shaft, *I*. Whenever the pallet *F* is liberated from the poles of the magnet, the pallet *g* comes in contact with the branches of the magnet. The bar *Y* connects the whole system with the lever *J* by means of the rod *S*.

Both electro-magnets, *A* and *R*, are connected by wires—the positive pole of one of them with the negative pole of the other, and vice versa—so that if a current increases the power of one of the magnets it weakens that of the other.

The disk *O* is made of a non-conducting material, but it has on its circumference seven metallic contacts, *A*, *B*, *C*, *D*, *E*, *F*, *G* (seen in any of the figs. 5 to 8); every two of them communicating with each other, as shown with dotted lines, excepting *D*, which leads to the ground. The disk turns between four rubbing triangular prisms, attached to flat springs and communicating: (1) *N*, with the negative pole of the battery; (2) *P*, with the positive pole of the battery; (3) *K*, with the wire of the bobbin of the electro-magnet *A*; and (4) *L*, with the wire of the line. On this last connection, a lightning-conductor, *Z*, is interposed (see fig. 2).

At *K* is a commutator, which serves to establish or to break the communication between the line and the apparatus; in the latter case, it connects the line wire with one of the poles of the battery, leading its other pole to the ground, and thus allowing conventional signals to be sent from one post to the other, by means of a vibrating bell, or the introduction into the telegraphic system of a new temporary telegraphic station, or other purposes.

fixed, position of the commutator *O*, shown in fig. 7. Besides the two fixed there are two intermediate positions of the commutator *O*, namely, the second and fourth, shown in figs. 6 and 8. The passage from the first to the third position of the commutator, always accomplished mechanically, produces the movement of the arm from vertical to horizontal, and establishes communication between the apparatus and the line (shown with dotted line in fig. 7). On its way, however, it passes the second position (fig. 6), and in this it connects the line-wire with the negative pole of the battery, sending thus a current which liberates the arm of the neighboring semaphore. The passage from the third to the first position, accomplished electrically, which completes the circle ( $210^\circ + 150^\circ = 360^\circ$ ), produces the movement of the arm from horizontal to vertical again, and while passing through the fourth position (fig. 8) it connects the line with the positive pole of the battery, sending a current which strengthens the power of the electro-magnet *R* (fig. 3), at the neighboring post, moving thus the target *V*, which will show its white half (or the word "clear") instead of the red half (or the word "blocked") through an opening in the cover of the apparatus, announcing that the signal has been produced. The two positions of the target *V* are shown in figs. 9 and 10.

Suppose, now, on a line divided into sections by the signal-posts, the starting signal-station to be *A*, the last station *Z*, and the intermediate stations *B*, *C*, *D*. A train leaves the station *A*, and the attendant turns the crank of the apparatus No. 1 to  $210^\circ$  (there is no apparatus No. 2 at the starting point). The large arm at *A* will thus be placed horizontally and held so by the magnet, closing the section; at *B* the small arm will be liberated, and thus become horizontal,



announcing a train—the consequence of the second (intermediate) position of the commutator *O*; at *A* the target *V* will be moved toward the electro-magnet, and show that the announcement of a train has been received at *B*, accompanying this with a stroke on the bell *J*—the consequence of the fourth (intermediate) position of the commutator *O* of the apparatus No. 2, at *B*. The signals remain now in this position until the train passes station *B*, when the attendant at *B* will manipulate his apparatus No. 1, producing the same effects at *B* and *C* as have been just described; but, this accomplished, he turns the crank of the apparatus No. 2, moving the commutator *O* from the first to the third position again, thus placing the small arm of his post vertically and sending to *A* a current which, acting there on apparatus No. 1, will liberate the large arm, and thus open again the section—this in consequence of the second position of the commutator *O* of the apparatus No. 2, at *B*. The same operation is repeated from post to post, until the last signal station *Z* is reached, where the attendant has only one apparatus, No. 2, to manipulate.

(TO BE CONTINUED.)

### Train Accidents in January.

The following accidents are included in our record for the month of January:

#### REAR COLLISIONS.

On the morning of the 3d an express train on the Michigan Central road ran into the rear of a local passenger at Pokagon, Mich., damaging the engine and several cars and injuring six persons. There was a heavy snow-storm at the time.

On the morning of the 3d a passenger train on the Delaware, Lackawanna & Western road ran into the rear of another passenger train which was stopping at the station in Newark, N. J., damaging the rear car. The second train had been signaled, but the rails were very slippery and the brakes failed to stop it in time.

On the 3d an express train drawn by nine engines on the New York Central & Hudson River road ran into the rear of a lot of engines and a snow-plow, which had left the track at the Sand Cut, near Fairport, N. Y. Five of the engines were thrown down a bank and several cars were badly damaged. The engineer of the first engine was killed, four trainmen and five passengers hurt.

On the afternoon of the 3d, as a passenger train drawn by two engines on the New York Central & Hudson River road was near Canastota, N. Y., the forward engine broke loose and shot ahead into a snow bank, where it stuck, and the rest of the train ran into it. Both engines and several cars were wrecked and the express car burned up. Four trainmen were hurt.

On the morning of the 4th a freight train on the Perkiomen Branch of the Philadelphia & Reading road ran into the rear of a passenger train, which was stopping at Zionsville, Pa., doing some damage and injuring five passengers.

On the 11th a freight train on the Marietta & Cincinnati road ran into the rear of some cars which had broken loose from a preceding freight near Mineral City, O., wrecking the caboose. The accident took place on a trestle bridge 30 feet high, and three men, who were in the caboose, jumped from it, landing on the ice of the creek below. One was killed, one fatally hurt and one less severely injured.

On the morning of the 13th a coal train on the Seattle & Walla Walla road ran into the rear of a preceding coal train near Steel's Place, Wash. Ter., doing some damage.

On the night of the 13th a passenger train on the Chicago, Burlington & Quincy road ran into the rear of a freight train near Wyandot, Ill., damaging a locomotive and several cars, and injuring two trainmen slightly.

On the 15th a snow plow on the Oswego & Syracuse ran into some freight cars standing on the track at Fulton, N. Y. Some damage was done and two trainmen hurt.

On the morning of the 16th a passenger train on the Central Railroad of New Jersey ran into the rear of a coal train in Elizabeth, N. J., wrecking the caboose and scattering coal cars over both tracks.

On the morning of the 17th a milk train on the Chicago, Burlington & Quincy road ran into the rear of a freight at Lund's Crossing, Ill., wrecking the caboose, damaging the engine and several other cars. A man in the caboose was slightly hurt. There was a thick fog at the time.

On the afternoon of the 23d, as a passenger train on the New York, Lake Erie & Western road was being run into the depot at Paterson, N. J., by a flying switch, the train ran over a misplaced switch and into some freight cars standing on a siding. Several cars were damaged.

Early on the morning of the 25th a freight train on the New York Division of the Pennsylvania ran into the rear of a preceding freight, which had stopped to take water at Tullytown, Pa. The locomotive and four cars were badly broken and two trainmen hurt so that they died in a few hours.

On the night of the 28th a freight train on the Chicago, Rock Island & Pacific road ran into a stock car which had been run upon the main track to load up, at Brooklyn, Ia. The car was wrecked.

On the evening of the 30th a freight train on the New York, Lake Erie & Western road ran into the rear of a preceding freight, which had stopped at Deposit, N. Y., doing some damage.

On the evening of the 31st a passenger train on the Dayton & Southeastern road ran over a misplaced switch and into the rear of a coal train standing on a siding in Dayton, O., wrecking several cars and injuring two brakemen.

#### BUTTING COLLISIONS.

On the evening of the 1st there was a butting collision between a freight and a local passenger train on the Pittsburgh, Cincinnati & St. Louis road at Temperanceville, Pa. Both engines and some cars were damaged. The freight train had run beyond the point where it should have stopped; the engineer claimed that he tried to stop, but could not hold his train.

On the night of the 4th, on the Ohio & Mississippi road, near Seymour, Ind., there was a butting collision between a freight train and a wild engine, by which both engines and several cars were damaged.

Early on the morning of the 15th there was a butting collision between an east-bound stock and a west-bound freight train on the Chicago, Rock Island & Pacific road, near Utica, Ill. Both engines and several cars were wrecked, and some stock killed.

On the morning of the 15th there was a butting collision between two freight trains on the Canada Southern road near Victoria, Ont., by which one of them was badly broken and the other damaged. The accident is said to have been caused by the carelessness of an operator.

On the night of the 23d a freight car broke loose from a freight train which was switching at Racine Junction, Wis., on the Chicago, Milwaukee & St. Paul road, and ran back at great speed down a grade and into the head of a passenger

train. The car was wrecked, the engine damaged and the fireman hurt.

About noon on the 23d there was a butting collision between a passenger train and a wild engine on the Lewis & Kennebec road at St. Anselme, P. Q. The engines were damaged and two cars badly broken; one passenger was killed and two badly hurt.

#### DERAILMENTS, BROKEN RAIL.

On the morning of the 3d six cars of a freight train on the Kansas Pacific road were thrown from the track by a broken rail near Detroit, Kan., and four of them were badly broken.

On the night of the 3d a passenger train on the Kansas Pacific road struck a broken rail near Topeka, Kan., and three cars were thrown from the track, one of them running down a bank. Three persons were hurt.

On the morning of the 4th a passenger train on the Louisville & Nashville road struck a broken rail near Paris, Tenn., and the sleeping car was thrown from the track and upset.

On the 8th four cars of a freight train on the Baltimore & Ohio road were thrown from the track by a broken rail near Salesville, O., blocking the road six hours.

On the 8th a passenger train on the Houston & Texas Central road was thrown from the track near Ennis, Tex., by a broken rail, and two cars were dragged some distance by the ties and badly damaged. Three passengers were hurt.

On the morning of the 9th a passenger train on the Springfield Division of the Ohio & Mississippi struck a broken rail near Altamont, Ill., and two cars were thrown from the track and upset, injuring seven persons, only one of them badly.

On the 9th a passenger train on the Texas & Pacific road struck a broken rail near Greenwood, La., and three cars were thrown from the track, one of them upsetting. The wreck caught fire, and was put out with some difficulty. A trainman was killed and seven passengers hurt.

On the afternoon of the 9th a freight train on the Cleveland, Mt. Vernon & Delaware road struck a broken rail near Millersburg, O., and the engine and five cars left the track and were piled up in a bad wreck. The fireman and a brakeman were badly hurt.

On the night of the 9th a passenger train on the St. Louis, Iron Mountain & Southern road was thrown from track near Kensett, Ark., by a broken rail. The baggage car was wrecked, killing one man, wounding another fatally and three more or less severely.

On the night of the 15th several cars of a freight train on the Winona & St. Peter road were thrown from the track by a broken rail, near Kasson, Minn.

On the 16th a passenger train on the Hannibal & St. Joseph was thrown from the track by a broken rail near Cameron, Mo.

On the 16th two cars of a freight train on the St. Paul & Sioux City road were thrown from the track near Lake Chrystal, Minn., by a broken rail.

Early on the morning of the 19th the sleeping-car in a passenger train on the Ohio & Mississippi road was thrown from the track by a broken rail near North Bend, O., and two passengers were hurt.

On the 19th a freight train on the Springfield Division of the Ohio & Mississippi road struck a broken rail near Pleasant Plains, Ill., and the engine and seven cars went into the ditch and were badly broken.

On the 20th the engine and 11 cars of a freight train on the New York, Lake Erie & Western road were thrown from the track near Andover, N. Y., by a broken rail, blocking the road six hours.

On the 23d a freight train on the Detroit, Lansing & Northern road struck a broken rail near Detroit, Mich., and the four rear cars went into the ditch. A brakeman was killed and the conductor hurt.

On the morning of the 28th the engine and two cars of a passenger train on the Marietta & Cincinnati road were thrown from the track by a broken rail near Marshfield, O.

On the night of the 28th a freight train on the Cincinnati, Sandusky & Cleveland road struck a broken rail near Sandusky, O., and eight cars were thrown from the track and wrecked, killing a lot of hogs.

#### DERAILMENTS, BROKEN WHEEL.

On the 3d a car in a freight train on the Pittsburgh, Ft. Wayne & Chicago road was thrown from the track at Arcola, Ind., by the breaking of a wheel.

On the morning of the 6th the tender of a passenger train on the Connecticut River road was thrown from the track at Smith's Ferry, Mass., by the breaking of a wheel.

On the night of the 7th the engine and several cars of a repair train on the New Orleans & Mobile road were thrown from the track near Lake Catharine, La., by a broken wheel.

#### DERAILMENTS, BROKEN AXLE.

On the night of the 14th an axle broke under the engine of a freight train on the Boston & Albany road, and the engine ran nearly two miles and stopped at Pittsfield, Mass., before it was discovered. The axle broke at the journal.

On the morning of the 20th the tender of a passenger train on the Pennsylvania road was thrown from the track by the breaking of an axle, near Hollidaysburg, Pa.

#### DERAILMENTS, BROKEN TRUCK.

On the 10th the sleeping-car of a passenger train on the Texas & Pacific road was thrown from the track by a broken truck near Lake Fork, Texas.

On the night of the 22d a car in a freight train on the Pittsburgh, Ft. Wayne & Chicago road was thrown from the track by a broken truck in Ft. Wayne, Ind., blocking the road two hours.

Early on the morning of the 24th a car in a freight train on the New York, Lake Erie & Western road was thrown from the track near Clifton, N. J., by the breaking of a truck. One track was blocked two hours.

#### DERAILMENT, BROKEN BRIDGE.

On the 28th five cars of a freight train on the Kansas City, St. Joseph & Council Bluffs road broke through a bridge at Union, Mo.

#### DERAILMENT, ACCIDENTAL OBSTRUCTION.

On the 5th the engine and two cars of a freight train on the St. Paul, Stillwater & Taylor's Falls road were thrown from the track in Stillwater, Minn., by a pile of dirt on the track.

On the 7th a passenger train on the Southern Pacific road was thrown from the track near Cucamongo, Cal., by sand drifted over the track by a high wind blowing in from the desert.

On the 31st a car of a freight train on the Washington City, Virginia, Midland & Great Southern road was thrown from the track near Manassas, Va., by a brake-beam dropping down on the rails, and nine freight cars were piled up together in a bad wreck, killing a brakeman.

#### DERAILMENTS, SPREADING OF RAILS.

On the 14th a car of a passenger train on the Southeastern Railroad of Canada, was thrown from the track near St. Johns, P. Q., by the spreading of the rails.

On the 23d a passenger train on the Missisquoi road was

thrown from the track by the spreading of the rails, near Green's Corner, Vt.

#### DERAILMENTS, WASH-OUTS AND LAND-SLIDES.

On the night of the 16th a coal train on the Knoxville & Ohio road ran into a rock slide near Coal Creek, Tenn. The engine was thrown to one side and nine coal cars were piled up together and wrecked, killing a brakeman.

On the morning of the 28th a passenger train on the Rochester & State Line road ran into a wash-out near Great Valley, N. Y. The engine went down 15 feet into the gap, with the baggage car on top of it; both were much damaged and three trainmen hurt.

#### DERAILMENTS, SNOW OR ICE.

On the 3d a passenger train on the New York Central & Hudson River road ran off the track in a snow-drift near Poughkeepsie, N. Y.

On the 3d a freight train on the New York Central & Hudson River road ran off the track in a snow-bank near Poughkeepsie, N. Y.

On the 3d a snow-plow and several engines on the New York Central & Hudson River road ran off the track in a snow-bank near Fairport, N. Y.

On the night of the 3d a wrecking train drawn by six engines on the New York Central & Hudson River road had all six engines off the track in a snow-bank near Fairport, N. Y.

On the night of the 3d the engine of a passenger train on the Burlington & Lamoille road ran off the track in a snow-drift at South Burlington, Vt.

On the morning of the 5th a work-train on the New York Central & Hudson River road ran off the track in a snow-bank near Jordan, N. Y.

On the afternoon of the 5th, as a snow plow and five engines were breaking through a drift on the New York Central & Hudson River road, near Batavia, N. Y., the plow jumped the track and upset, the first engine was thrown on its side across the track and wrecked, and three other engines left the rails. The fireman of the first engine was injured so that he died in a few hours, and two others were hurt.

On the 7th, as a working train on the New York Central & Hudson River road was clearing out the track it ran into a snow-bank near Middleport, N. Y., with such force that the first engine jumped up from the track and fell over on its side in the snow. The second engine was thrown over on top of the first, both being wrecked, and the third was much damaged. Three trainmen were hurt.

On the 9th seven cars of a freight train on the Chicago, Burlington & Quincy road were thrown from the track near Bristol, Ill., by ice packed down on the rails.

On the 11th the engine of a passenger train on the Prince Edward's Island road ran off the track in a snow-drift near Georgetown, P. E. I., blocking the road some time. A fireman was hurt.

On the morning of the 13th a work-train on the New York Central & Hudson River road was thrown from the track by snow packed down on the rails, near Tonawanda, N. Y. The engine and caboose were upset and badly broken, and five laborers hurt.

#### DERAILMENTS, MISPLACED SWITCH.

On the night of the 2d a passenger train on the South & North Alabama road was thrown from the track by a misplaced switch at Birmingham, Ala., and the engine upset and was damaged.

On the evening of the 16th the engine of a freight train on the New York, Lake Erie & Western road was thrown from the track in Paterson, N. J., by a misplaced switch.

On the 18th a passenger train on the Pittsburgh, Cincinnati & St. Louis road was thrown from the track at McDonald's, Pa., blocking the track half a day. Two cars left the track. The fireman was badly hurt. The accident was caused by a misplaced switch.

On the 19th a freight train on the San Luis Obispo & Santa Maria Valley road was thrown from the track at Avila, Cal., by a misplaced switch. The engine and several cars were damaged and the engineer hurt.

#### DERAILMENT WITH MALICIOUS INTENT.

On the evening of the 31st a passenger train on the North Pennsylvania road was thrown from the track by a misplaced switch at Iron Hill, Pa. The switch-lock was found to be broken, and the switch is believed to have been purposely set wrong.

#### DERAILMENTS, UNEXPLAINED AND MISCELLANEOUS.

On the afternoon of the 2d a freight train on the Chicago & Northwestern road ran off the track near Oak Creek, Ill., blocking the road several hours.

On the afternoon of the 3d the engine of a freight train on the Brunswick & Albany road was thrown from the track on a trestle over Big Buffalo Swamp, Ga., where some section men had taken out a rail for repairs. They had put out a signal, but the wind had blown it down, and it was not seen.

On the night of the 5th the engine and nine cars of a freight train on the Houston & Texas Central road ran off the track near Burton, Texas. Some of the cars were wrecked, killing 20 horses.

On the afternoon of the 6th a local freight train on the Rutland road was thrown from the track near Ludlow, Vt., 17 out of 21 cars leaving the rails, and nine of them going down a bank. The road was blocked all night.

On the evening of the 8th five cars of a freight train on the Houston & Texas Central road were thrown from the track near Chapel Hill, Tex., and the caboose upset.

On the 9th the rear truck of the tender of a freight train on the New York, Lake Erie & Western road was thrown from the track near Salamanca, N. Y.

On the morning of the 10th a freight train on the Little Rock & Fort Smith road ran off the track near Conway, Ark., blocking the road some time.

On the morning of the 11th a car of a freight train on the Pittsburgh, New Castle & Lake Erie road ran off the track near Ebensburg, Pa.

On the afternoon of the 11th a car in a freight train on the Pittsburgh, New Castle & Lake Erie road ran off the track near Harmar, Pa. The cars were new and it is said that too little clearance had been allowed to the wheels.

On the afternoon of the 11th the engine of a freight train on the St. John & Maine road ran off the track while switching some cars at Fairville, N. B., blocking the road an hour.

On the 13th two cars of a freight train on the New York, Lake Erie & Western road ran off the track near Port Jervis, N. Y., doing some damage.

On the morning of the 14th some cars of a coal train on the New York, Lake Erie & Western road ran off the track near Passaic Bridge, N. J., blocking one track some hours.

On the 14th four cars of a freight train on the Pittsburgh, Fort Wayne & Chicago road ran off the track in Fort Wayne, Ind.

On the night of the 17th some cars of a freight train on the New York, Lake Erie & Western road ran off the track near Goshen, N. Y., blocking the road several hours.

On the night of the 17th several cars of a freight train on the Indianapolis, Bloomington & Western road ran off the track at Beckwith, Ill. The cars were badly broken and 50 hogs killed.

On the night of the 20th two cars of a passenger train on



the New York, Lake Erie & Western road ran off the track in Middletown, N. Y., delaying the train for a time.

On the morning of the 21st several cars of a freight train on the New York, Lake Erie & Western road ran off the track at Penn Horn, N. J., blocking one track two hours.

On the 21st a car in a freight train on the Boston, Barre & Gardner road ran off the track on a bridge near Winchendon, Mass., but the guard-rail kept it from leaving the bridge.

On the morning of the 22d a passenger train on the Pittsburgh, New Castle & Lake Erie road ran off the track near Evansburg, Pa., blocking the road two hours.

On the 23d the engine of a freight train on the Western & Atlantic road ran off the track in Atlanta, Ga.

On the night of the 23d the caboose of a freight train on the Atchison & Nebraska road ran off the track in Atchison, Kan.

On the morning of the 24th a car in a passenger train on the Pittsburgh Division of the Baltimore & Ohio jumped the track at Brown's, Pa.

On the 24th the rear car of a freight train on the Texas & Pacific road ran off the track and upset in Shreveport, La. A brakeman was thrown under the car and crushed to death.

On the 24th a freight train on the Savannah & Charleston road ran off the track near Yemassee, S. C., blocking the road several hours.

On the morning of the 25th a freight train on the Grand Trunk road ran off the track in Brampton, Ont., and some cars ran over the side of a bridge and fell down into a street below.

On the evening of the 27th some cars of a coal train on the Pennsylvania Railroad ran off the track near Monmouth Junction, N. J., blocking the track a short time.

Late on the night of the 29th the two rear cars of a freight train on the New York, Lake Erie & Western road ran off the track near Hohokus, N. J., one being thrown across the track and blocking it nearly five hours, while the other went down the bank and was badly broken.

On the morning of the 30th several cars of a freight train on the Boston & Albany road ran off the track in Springfield, Mass., doing some damage.

#### BOILER EXPLOSIONS.

On the afternoon of the 2d the engine of a freight train on the Central Pacific road exploded its boiler while passing through Tunnel No. 8, a mile east of Summit, Cal., the summit of the Sierra. The engineer and fireman were killed, and the conductor badly hurt. The engine, a ten-wheel freight engine, of Mason build, was torn to pieces. It was believed to be in good condition, and no cause for the explosion is known.

On the morning of the 13th the engine of a freight train on the Buffalo, New York & Philadelphia road exploded its boiler while standing at Springville, N. Y. The forward part of the engine was much damaged, a part of the barrel of the boiler being torn off. A man standing on the platform was scalded.

On the evening of the 27th a new engine making its trial trip on the Bradford & Foster Brook road exploded its boiler near Bradford, Pa., destroying the engine, killing three men at once, injuring three so that they died in a short time, and injuring five others less severely. The road is an experimental one, on the elevated one-rail plan, and the boiler was built so that it was in two parts, one each side of the rail. It is said that the connection between the two sides of the boiler had been accidentally closed, so that one side had very little water in it.

On the night of the 27th, as a freight train on the New York, Lake Erie & Western road was passing Hampton, N. Y., the crown-sheet of the locomotive fire-box gave way, driving out fire and steam into the cab. The engineer, fireman and conductor were much scalded.

#### BROKEN CONNECTING RODS.

On the morning of the 11th the engine of a local passenger train on the Pennsylvania road broke a parallel rod when near Brinton, Pa., doing some damage and delaying the train a short time.

On the evening of the 15th, as a passenger train on the New York Central & Hudson River road was near Hall's, N. Y., a parallel rod broke on the engine. The loose end tore up one end of the cab and injured the fireman.

On the 16th, the engine of a freight train on the Cheshire road broke a parallel rod at Marlboro, N. H., and was badly damaged.

On the evening of the 18th the engine of a milk train on the New York, Lake Erie & Western road broke a connecting-rod at Shin Hollow, N. Y., doing some damage.

On the morning of the 21st the engine of a passenger train on the New London Northern road broke a parallel rod when near Trading Cove, Conn. The broken rod tore a hole in the fire-box and otherwise damaged the engine; the engineer and fireman were hurt.

On the afternoon of the 26th the engine of a freight train on the New York Central & Hudson River road broke both connecting rods when near Rome, N. Y.

#### OTHER ACCIDENTS.

On the morning of the 6th the engine of a passenger train on the New Haven & Northampton road blew out a cylinder head when near Granby, Mass., and the connecting rod was broken, one end being driven up through the running board, damaging the engine considerably.

On the night of the 8th the engine of a passenger train on the Pensacola road lost the bottom brace-bolts on the truck and bent the truck frame badly, but did not leave the track. It was blocked until next day.

On the morning of the 23d, as a passenger train on the New York, Lake Erie & Western road was near Middletown, N. Y., the tire of a driving-wheel broke and a large piece was thrown up through the running-board into the cab. The engine did not leave the track.

This is a total of 113 accidents, whereby 23 persons were killed and 90 injured. Fourteen accidents caused the death of one or more persons; 21 caused injury, but not death, while in 78, or 69 per cent. of the whole number, there was no injury serious enough for record.

As compared with January, 1878, there was an increase of 38 accidents and 13 persons injured, the number killed being the same.

These accidents may be classed as to their nature and causes as follows:

<b>COLLISIONS:</b>	
Rear collisions.....	16
Butting collisions.....	6
<b>DERAILMENTS:</b>	
Unexplained.....	27
Broken rail.....	18
Broken wheel.....	3
Broken axle.....	3
Broken truck.....	2
Broken bridge.....	1
Accidental obstruction.....	3
Spreading of rails.....	2
Carried forward.....	59

Brought forward.....	59
Land-slide.....	1
Wash-out.....	1
Snow or ice.....	11
Misplaced switch.....	5
Rail out for repairs.....	1
<b>Total.....</b>	
<b>113</b>	

Boiler explosions.....	4
Broken connecting-rod.....	6
Cylinder-head blown out.....	1
Broken truck not causing derailment.....	1
Broken tire.....	1

Total..... 113

Three collisions were caused by snow; three by trains breaking in two; two by misplaced switches; one each by mistake in orders, by fog, and by a car left on the main track. Of the five misplaced switches one was purposely set wrong, and this is the only malicious derailment recorded. Forty-three accidents are traced directly to defects or failures of road or equipment.

The division of accidents according to the classes of trains, and some other divisions are as follows:

Accidents:	Collisions.	Derailments.	Other accidents.	Total.
To passenger trains.....	3	25	7	35
To a passenger and a freight train.....	10	6	0	16
To freight trains.....	9	53	6	68
<b>Total.....</b>		<b>78</b>	<b>13</b>	<b>113</b>
<b>Casualties:</b>		<b>Killed.....</b>		<b>Injured.....</b>
		6		23
		35		90

Misplaced switches still remain in too great number, this kind of carelessness causing four derailments and two collisions, besides a case where one was maliciously set wrong. There was one case of carelessness of a very inexcusable kind, where trackmen had taken out a rail without setting out proper signals. This occurs now and then, on an average half a dozen times a year or so.

The month was a striking example of the direct influence of the weather. It had the largest number of accidents recorded in any month for two years, and the increase over the average of last year is traceable directly to the severe cold and heavy snow-storms of the month. The large number of broken rails, one more than was recorded during the whole year 1878, and other breakages, are due to the cold and the heavy pounding on hard frozen road-beds. Besides the accidents traced above directly to snow on track, which should probably include also some of the unexplained, there must have been a great number of small derailments from snow, which escaped record from their lack of importance, or in the general confusion.

For the year ending with January the record is as follows:

	No. of accidents.	Killed.	Injured.
February.....	67	8	31
March.....	49	5	14
April.....	46	12	55
May.....	50	13	44
June.....	56	12	58
July.....	54	7	41
August.....	75	36	108
September.....	70	22	53
October.....	61	35	163
November.....	68	15	54
December.....	63	16	58
January.....	113	23	90
<b>Total.....</b>		<b>778</b>	<b>204</b>
		<b>769</b>	

The averages per day for the month were 3.65 accidents, 0.74 killed, and 2.90 injured; for the year they were 2.13 accidents, 0.56 killed, and 2.11 injured. The average casualties per accident were, for the month, 0.204 killed and 0.796 injured; for the year, 0.263 killed and 0.988 injured. The number of casualties for the month was not great, considering the number of accidents.

#### Argument Against the Reagan Bill.

Within the past two weeks several leading railroad men have appeared before a sub-committee of the Senate Committee on Railroads to give their opinions as to the probable effect of that bill if it should become a law. Among them was Mr. G. R. Blanchard, of the New York, Lake Erie & Western Railroad, whose argument has been printed, forming quite a volume of 60 pages, crammed with facts and arguments which Mr. Blanchard's intimate knowledge of the traffic of the country puts at his disposal, and which are striking evidence of the great complexity of transportation business and of the wide and minute knowledge needed by a traffic manager to enable him to conduct his business wisely—and, we may add, of the utter impossibility of applying any hard and fast rule to the making of rates. We copy below only a few concluding pages of Mr. Blanchard's argument:

At different stages of the argument I have, inferentially, approved modified legislation upon certain branches of this subject. I now desire to give form to those suggestions—

First.—That the element of quantity and regularity be recognized in railway transportation, as in every other mercantile transaction.

Second.—That the railways may adopt different rates upon different quantities, but, when so adopted, such schedules of quantity and variations of rate shall be published and posted.

Third.—That the railway companies shall be required to apply these schedules only to business between the seaboard and common Western points, but may do so upon other traffic.

Fourth.—That it shall be unlawful to vary from such rates or quantities, except upon such notice as the railway companies may so publish.

Fifth.—That, if any other variations are made, by rebate, drawback, or otherwise, the penalties shall apply alike to the railway companies that pay them and to the party who receives them.

This is surely defensible and just, upon the theory that receivers of stolen goods or accessories to crime can be made responsible.

Sixth.—The organization of a board or boards of railway arbitration, whose existence shall be legally recognized by national enactment, and whose decisions may be enforced in and by United States courts.

I believe I utter the sincere wish of every railway manager of the country when I say that they desire stability

and uniformity of rates, which shall yield only fair margins of profit, and that any law which will accomplish this great end, and so put a stop to discriminations by concealed concessions in rates, in the form of drawbacks or rebates, and which to that extent are unjust, will receive their cordial and united support. At the same time, I have spoken to but little purpose if I have not left in your minds good reasons for more closely scrutinizing this act. For myself, I question its wisdom and object to its application. I believe that practice under it, with the desire to fulfill it, will develop discriminations of greater variety and extent, applicable to a larger traffic, and involving more values than any which have been known during our previous railway history. I believe the application of one law to all the railways of the United States to be impracticable, void of good, full of harm, unjust, unequal, and injurious, or exceptionally beneficial, as I have but briefly shown.

Farther, I object to this exceptional legislation, in that, while protesting against discrimination, this act in itself discriminates unusually and unjustly against the largest single interest of the country, and the interest which has done more to make the nation what it is than any other that can be named.

It will be conceded that flour enters more largely into the economy of human life than any other staple; yet, less than 10 per cent. of its average cost at the doors of dwellings throughout the Union, is made up of the amount it has paid for railway transportation. I believe it to be as impracticable to legislate for that 10 per cent. as it is for the other 90 per cent. I believe it unjust to legislate upon any fraction of its value, but clearly more unjust to legislate for one-tenth than for the nine-tenths. Surely, if the people need protection upon anything, they need it upon an article of such universal use. And, is it not true that, while the transportation of flour between Chicago and New York is but one-third at this time what it was at different periods during the war, the remaining portion of cost has not been reduced in the like proportion? I believe the natural laws which govern the transportation of flour in the manner I have cited are as absolute as the laws of snow and rain, light and darkness which stimulated the wheat to growth and perfection; and that an attempt to so legislate will involve the people and their carriers in interminable litigations and vast expense, a maximum of annoyance and a minimum of good.

My colleagues will argue the legal features of this bill, but I venture to suggest that if the values which transportation adds to market prices of all commodities at points of delivery are subject to legislative action, because it is interstate commerce, and such transportation charges are but one-tenth or any other fraction of such value, and Congress has the power to legislate upon that one-tenth, why has it not the right to legislate upon the entire value of all the goods passing from all points within one State to all destinations in other states, under the same definitions or interpretations of commerce between the States?

I note with pleasure one thing: It is but a few years since lower through rates were demanded. That question seems to have been settled without law enforcement, and neither the report nor debates upon this act claim excess of rates upon through traffic, but aim solely to bring down local rates. Cannot this be as safely left to the natural causes which rectified former complaints? In this view, I have looked carefully through the last debates upon this bill, and the report which accompanied it, to ascertain what public sentiment demands it, and what interests are so injured that they call for its passage. I can only find a statement that evidence of discrimination has been submitted by the Board of Trade and Transportation of New York, from the Chamber of Commerce of New York city, and from a number of leading commercial cities of the United States; and that a resolution was passed March, 1878, by the New York Assembly, asking for "equity in rates of freight," without specifying or suggesting that equity or a remedy. I find but one further allusion, and that relates to the Standard Oil Company. The latter case is now before the courts of Pennsylvania for adjudication, where it will be decided where all such questions can be taken and should be left, and as its transportation via the Pennsylvania Railroad is all in Pennsylvania, this act would not touch that railway.

I object in any case to the passage of an act upon the *ex parte* representations of boards of trade, or other bodies of any city or cities, until their carriers have a fair opportunity to be heard.

I then ask what proportion of the vast transporting public of the United States has expressed dissatisfaction, in proportion to the enormous number of them, and the value of products transported and the leading industries of the country to which it relates?

Is not transportation, upon the whole, more satisfactorily performed, and at a lower margin of profit, than any other traffic of the country? Is not the clamor against banks; against the manufacturers of flour, for putting up its price; against the stock exchanges, for their enormous fluctuations within periods of a week, without any corresponding changes in values; against produce exchanges, for their fluctuations in all kinds of grain and produce, by corners; against petroleum exchanges, for fluctuations in the prices of oil as great as one dollar per barrel per month; against trades-unions; against combinations of manufacturers in the leading articles of trade, better founded and more universal than that against railways, and do not those questions first require legislation?

One of the advocates of the bill cited the sudden and great changes in freight rates. Do those changes compare, in annual average of tariffs, with the number, suddenness, or range of changes which the great speculative grain centres force upon the farming and consuming communities? And if, because of changes in rate, railways are to be legislated against, how can you decline to regulate, by law, the changing prices of the necessities and staples of life; and if the facilities of transportation, then why not all the equally essential inter-state facilities and detail for financial conversion, purchase and sale?

I object to all such legislative endeavors, and, as applied to railways, I believe this act would involve, practically and legally, questions of confiscation. I believe that in other instances it would come in conflict with the constitutions of states, the proportions of inter-state rates accruing in each state, and the charters or general laws under which their railways were constructed. I believe it would enforce upon carriers unjust and burdensome duties for inadequate compensation. I believe that this question is best left to those active brains that make its solution the aim of their reputations and fortunes, rather than confide it to legislators, whose railway inexperience may work a public hurt instead of benefit.

#### IN CONCLUSION.

At the close of the year 1877, there were in operation in the United States upward of 74,000 miles of railway, in addition to work then progressing or contemplated upon about two thousand miles more, involving a capital and funded debt of \$4,569,000,000, with gross earnings of \$472,000,000, and net earnings of but \$176,000,000, of which but \$58,000,000 were paid as dividends to the holders of shares.

The entire disbursements, irrespective of interest upon bonds and dividends, were thus \$300,000,000, and this vast



sum of money was disbursed to artisans and enlightened labor, and through them reached more interests and individuals than those of any other calling in the Union.

I cite the magnitude of these figures and interests to invoke in their behalf the most careful and judicious consideration, not only to the proposed bill, but to every measure which directly or indirectly, with good or inconsiderate intent, undertakes, in a national sense, the supervision or regulation of the methods by which the railways of the country shall apply the capital of which they are the enlightened and responsible custodians, to the living trade problem of the day, the transportation of the nation's products and people. I believe that to legislate exceptionally for this vast interest, and to leave rates upon water routes entirely free, and permit that they govern the rates of competing railways, without a like application of a like law, is the highest, because it would be a national, injustice and discrimination, and I believe that its practical effect will be abortive.

I think it was in 1867 that a royal commission, appointed in England to investigate this subject in all its bearings, reported as follows: "Inequality of charge in respect of distance, besides being a necessary consequence of competition, is an essential element in the carrying trade; that is to say, the principal which governs the railway company in fixing the rate is that of creating a traffic by charging such a sum for conveyance as will induce the produce of one district to compete with that of another in a common market. The power of granting special rates thus permits a development of trade which would not otherwise exist; and it is abundantly evident that a large portion of the trade of the country at the present time has been created by and is continued on the faith of special rates."

And they add: "The conditions under which such rates are granted are so numerous that no special law could be framed to regulate them."

In 1872 a sub-committee of both houses of the English Parliament was appointed to consider matters almost identical with those sought to be governed by the bill, and after a session of five months, and hearing the most expert testimony in England, and after passing in review the complaints and remedies similar to those which American legislatures annually receive and propose, they concluded that equal rates are "inexpedient," and gave the following reasons why such proposal was "impracticable":

"It would prevent railway companies from lowering their fares and rates so as to compete with traffic by sea, by canal, or by a shorter or otherwise cheaper railway, and would thus deprive the public of the benefit of competition, and the company of a legitimate source of profit. It would prevent railway companies from making perfectly fair arrangements for carrying at a lower rate than usual goods brought in large and constant quantities, or for carrying for long distances at a lower rate than for short distances. It would compel a company to carry for the same rate over a line which has been very expensive in construction, or whose high gradients, or otherwise, is very expensive in working, at the same rate at which it has carried over other lines."

This is surely national, impartial, and, I trust, convincing testimony.

Mr. Charles F. Adams, Jr., thus states his convictions after a thorough investigation, as to governmental regulation of railroad tariffs. Referring especially to the English laws, he says: "Nowhere has the system of special legislation been so persistently followed, and nothing, it may be added, could have been more complete than its failure." Again he says: "The result of thirty years of successive and wholly abortive efforts in this direction in England has at last settled down in the conviction that the developments and necessities of trade in practice always have nullified, and inevitably must nullify, the special acts, no matter how carefully and skillfully they may be prepared."

The views to which I have herein given expression are not those of recent conviction. On May 15, 1874, I had the honor to respond to the toast of "Our Railways," at the annual dinner of the New York Produce Exchange, and, at that time, expressed the following sentiments, which time has only strengthened:

"I am no apologist for even questionable railway practices. The standards of elevated American railway credit should be nailed again to many a staff whence its colors were shamefully pulled down by fraud and corruption. Its contact with legislation should be pure and undefiled; it should recognize and obey charter law. Managers should be restrained from trafficking in their secrets or fattening upon their fortunes or misfortunes; many stocks should not be so homeopathically diluted; many bonds should have a firmer basis of reality; many railways should not be built, and many towns and cities should cease the assumption of debt upon the securities of shadows. Our railways should be as sound and well-managed as our banks, for they are alike custodians of public and private interests and the conservators of public repute and credit at home and abroad. Such concessions to public sentiment and welfare are well demanded, but I submit to your mercantile judgment the questionable results of erratic, restrictive railway tariff legislation. It has failed in all countries which have tried it; it deals in values, and cannot justly establish them for transportation or food; it attacks their usefulness and credit; it disturbs and diverts capital; it creates fictitious and factious issues; it denies investors the rights secured to them in all other forms of venture; it retards material prosperity and increase; it encourages bribery and fraud, jobbery and consolidation; it stimulates the disastrous contests of labor with capital; it removes the elements of fixed calculation and substitutes the uncertainties of public caprice; it impairs the obligations of contracts; it tends to unwise expenditures of public moneys; it places states and nations in hostility to the great enterprises that developed them; it involves private and public interests in antagonisms, which undermine confidence and breed long lines of disaster to both; and, lastly, it unwisely attempts to repeal the inflexible and immutable laws of trade and competition. Between the extremes, it seems to me, lies the fair road to mutual prosperity. If the voice of public clamor finds permanent expression in the enactment of unwise laws in this regard, the results are easily sketched. If fair remuneration to carriers is thus prevented, their laborers will be paid tardily; improvements must cease, supplies cannot be promptly paid for; tracks and equipments will deteriorate, and property and life be endangered; shops and depots cannot be erected; adequate terminal facilities cannot be provided, or branches constructed for increased traffic; bonds and interest will become doubtful, and share accounts more dubious; and railways and all their contingent interests will be alike paralyzed. On the other hand, if railway charges are excessive, coal, iron and minerals will remain comparatively undeveloped in the hills; more timber will stand uncultivated in the forests; fewer cattle will be grazed for shipment; grain will not be grown or milled for export; towns and cities will not grow adequately in wealth, population or industries to furnish traffic for transporters; and the public and railways will feel the reflex injury. Mutual forethought and provision, therefore, seem to say that railway policy is the wisest which supplies the best transportation facilities for the existence and growth of the people and the products of their labor, and that public policy the best which concedes a just margin of profit to carriers and the carried. In a word, either place all the elements of value in property

transported under like general laws as far as practicable, or let them remain alike undisturbed by special legislation."

I would apologize for the length of this argument, were it not that in my judgment many of the war and resumption acts, which commanded and received the attention and discussion of our best brains for long periods, were not more important upon the general welfare than this, and it cannot be too fully debated.

Since my arrival here to-day, I learn that a National Railway Commission has this day been suggested in the Senate, for the consideration of this vast question, by a resolution which has been referred to your Committee.

I regard this as eminently wise and just, and it is the conclusion at which commercial, conservative and monarchical England arrived after forty years of erratic railway tariff legislation, during which time it enacted over three thousand bills at enormous cost to, and with disastrous effect upon, both its mercantile and railway interests.

The conclusions at which that Royal Commission arrived in 1872, after five months of patient hearing, are stated on the 57th and 58th page of this argument, and I believe a like Commission, especially in free and republican America, would arrive at the same judgment more speedily, from the greater complications involved and our lower present rates. I urge this Commission for the further reason that the limited time now remaining of this session, if entirely devoted to this question, and aided by the most unprejudiced railway experience, is inadequate to the wise and equitable decision which the magnitude of all the interest involved clearly merits.

#### Determination of Rates for Interchanged Traffic—Award of the Massachusetts Railroad Commission.

The laws of Massachusetts originally contemplated the traffic originating on a railroad and delivered by it to other lines to be forwarded as the business of the road on which it originated. The following decision of the Massachusetts Railroad Commission is interesting as marking the formal abandonment of that theory:

##### COMMONWEALTH OF MASSACHUSETTS,

In Board of Railroad Commissioners, Feb. 4, 1879.

In the matter of the petition of the Nashua & Lowell Railroad Corporation praying the board to determine the rates to be paid by said corporation to the Boston & Lowell Railroad Corporation for drawing passengers, merchandise and cars between Lowell and Boston.

This was an application under the provisions of sections 165-7 of chapter 372 of the acts of 1874. By the terms of its charter (acts of 1836, chapter 249) the Nashua & Lowell Railroad Corporation was authorized to enter its road upon, unite the same with and use the railroad of the Boston & Lowell Railroad Corporation, and by the subsequent act of 1857, chapter 291, section 1, this right was made reciprocal. In the present case a petition was signed by one only of the corporations owning the connecting roads, and the request was that, as the two corporations could not agree on the reasonable compensation for which the Boston & Lowell should draw over its road the passengers, merchandise and cars of the Nashua & Lowell, and provide for its suitable depot accommodations, the Commissioners would determine the question and "apportion to the corporations their respective shares of the expenses, receipts and income" of the traffic.

The power of this board in the premises under sections 165-7 of the general railroad act of 1874, is of the widest possible description. It is under no obligation to assign any ground whatever for the conclusions it may reach; and in establishing rates of compensation, it is at liberty to fix them either upon an arbitrary basis of so much per passenger and per ton per mile, or it may apportion receipts according to the work done, taking all the facts of the case into consideration and "having reference to the convenience and interests of the corporations and the public." The present case is peculiar, and in making their award the commissioners propose to state the grounds upon which that award is reached, and to make them part of it, in order to secure to both parties any right of appeal and revision which may result from so doing.

The two corporations form part of one connecting line of road from Boston to Nashua in New Hampshire. In New Hampshire they connect with other roads, making with them a through line to the West and Canada. In the year 1858 they made an agreement for the joint operation of their roads and transaction of business. During the continuance of this agreement the joint management made large investments in terminal facilities at Boston for the accommodation of the common business. The agreement expired by its own limitation of time in November, 1878, and was not renewed. The ownership of the terminal grounds and building is chiefly in the Boston & Lowell road, but a portion of those used for freight purposes is owned jointly by the two companies. This ownership, so far as it is joint, does not affect the present award, being a matter to be settled elsewhere by division or payments for use and occupation. The case stands, therefore, simply as if the Nashua & Lowell sought to reach the terminal accommodations of the Boston & Lowell in order to make use of them. Its claim is that it has, under the law, a right to enter upon the tracks of the other corporation, for this purpose, upon the payment of a reasonable compensation, and that this compensation is to be fixed without regard to the cost of the particular terminal facilities in question, but simply on due consideration of a fair value for the services rendered. It also claims that all the business delivered by it to the Boston & Lowell road, or received by it from the Boston & Lowell, in both cases in its own cars, is to be regarded by the Commissioners in making this award as its business, upon which it is simply to pay a reasonable arbitrary rate to the other corporation.

The question as to which of two connecting companies a joint business belongs to is one impossible to decide on any fixed principles. The laws of this, as of other states, were apparently framed on theories in relation to the so-called ownership of business by railroad companies, on tracks other than their own, which the development of the railroad system has made wholly obsolete. However it may have been in the contemplation of the legislators of forty years ago, in modern every-day practice no corporation has any special property in a business after it goes into the hands of another corporation. Had it such a right, the Boston & Albany, for instance, under the laws of the various states, might claim as its own all the business originating or ending on its line between Boston and Chicago, or even San Francisco. The idea of an ownership in traffic has, it is true, never been formally taken out of the law of connecting roads, but it was practically abandoned in the passage of the law of 1857, making the right to enter and use reciprocal. Since that time this right has simply been a provision for effecting, in the interest of the public, a compulsory interchange of traffic between railroad corporations, upon such as arbitrators should, in view of all the facts in the case, decide to be fair and reasonable. The theoretical idea of a distinctive ownership of business was thus merged in the practical fact of a very complicated but necessary interchange of it.

In the dealings between railroad corporations, however, a distinction has been and still is made between continuing lines and branch roads or feeders. This distinction seems founded on no principle, but it none the less does exist, and is recognized; rather it would seem as a matter of favor to enable the branch roads or feeders to sustain themselves than as one of right. It is many years, however, since the principle has in practice been applied to direct continuations or parts of any through line, and to these in the dealings of the railroads with each other the *pro rata* system of apportionment has of late been almost universally applied.

The Nashua & Lowell is in no way a branch road. It is a direct continuation of the Boston & Lowell, forming with it part of a through line. Looking, therefore, at the two roads as forming part of one continuous whole, the question in the present case is of the apportionment of the expenses and receipts of a joint business. In fixing this the commissioners must endeavor to ascertain what is in itself reasonable, and cannot accept for their guidance arbitrary rates made by either or both of the corporations before them in contracts with connecting roads. The rates fixed in those contracts may be reasonable, or they may not. As is very well understood by those at all conversant with railroad contracts, the rates expressed in them are the result of circumstances and bargaining. In practice they are reasonable or not, just in the degree in which the contracting parties occupy equal positions, or are in the power the one of the other. Before this board it is different. The simple rule here should be what, all things being taken into consideration, is a fair basis on which joint business should be done.

The Nashua & Lowell road, it seems, collects a scattered traffic and delivers it by the car-load to the Boston & Lowell. This collection of the business is the disadvantage under which the Nashua & Lowell labors. The Boston & Lowell, on the other hand, receives the business thus collected in full car-loads, and simply delivers it at its terminal point. This is the advantage which the Boston & Lowell enjoys. At the terminal point, however, it has to provide facilities. Every one at all familiar with modern railroad development knows that it is almost out of the question for any corporation owning and operating only 30, 50, or 100 miles of road leading into a great city to supply the terminal accommodations in that city necessary to accommodate the business of many hundred miles of connecting road, without being ruined in the process. This is the burden of the Boston & Lowell. The Commissioners are disposed to consider that furnishing the terminal facilities is, if anything, a heavier burden in the present case than the collection of the business. Indeed, it was ascertained at the hearing, and fully admitted, that the single terminal mile of the Boston & Lowell at Boston represented a heavier investment of capital than the entire Nashua & Lowell. Taking, therefore, all the circumstances into consideration, they base their award accordingly upon an equal division of receipts, in proportion to the mileage the business is carried over the road of each company, a suitable allowance being made for the use of cars.

The Commissioners do therefore determine and award that the Boston & Lowell Railroad Corporation shall at reasonable times draw over its road the passengers, cars and merchandise of the Nashua & Lowell Railroad Corporation, and provide convenient and suitable depot accommodations therefor, and in consideration of its so doing and in full compensation therefor the receipts and income from the transportation in which said corporations are so jointly interested shall be apportioned *pro rata* between them on the basis of the mileage of said transportation over their respective roads.

For the use of the cars of the Nashua & Lowell Railroad Corporation when upon the tracks of the Boston & Lowell Railroad Corporation, the latter corporation shall pay compensation as follows, viz: For each passenger car, three (3) cents per mile; for each baggage car, two (2) cents per mile; and for each freight car, three-fourths (¾) of a cent per mile. By the understanding of parties the question of terminal freight charges was not considered or included.

This award shall take effect from the date of the filing of the petition, Jan. 31, 1879.

By the Board of Railroad Commissioners,

WILLIAM A. CRAFTS, Clerk.

#### Methods of Railroad Taxation.

The following circular will explain itself. The subject is one that deserves thorough investigation, as the methods of taxation are various and complicated, and in some cases at least oppressive and unjust:

OFFICE BOARD OF RAILROAD COMMISSIONERS,  
No. 7 Pemberton square, Boston, Feb. 10, 1879.

SIR: At a general convention of boards of railroad commissioners of various states held at Columbus, Ohio, on the 12th and 13th of November last, the following vote was passed:

Resolved, That a committee of three be appointed to examine into and report the methods of taxation as respects railroads and railroad securities now in use in the various states of the Union, as well as in foreign countries, and, further, to report a plan for an equitable and uniform system for such taxation, at the next meeting of this convention.

As chairman of the committee appointed under that vote, I am instructed to ask you for detailed information as to the system or systems under which taxes are assessed upon the corporations with which you are connected in the various states in which they operate roads.

I need not point out to you the importance of this inquiry. The railroads of this country are now in cases subjected to several and conflicting forms of taxations under systems little understood and often not intelligently administered. The object of this inquiry is to obtain a body of information on the subject which shall be generally accessible. You would, therefore, confer a great favor by referring this letter to the official in charge of questions of taxation in which the corporations under your management are concerned, with directions to inform me on the subject at his earliest convenience.

I remain, etc., CHARLES F. ADAMS, JR., Chairman.

POINTS UPON WHICH INFORMATION IS MORE PARTICULARLY DESIRED.

1. Upon what general recognized principle, if any, is the railroad taxation of the state in question based?
2. In how far are the corporations taxed as holders of realty?
3. In how far as holders of personality?
4. In how far are they subject to a franchise tax?
5. In how far is their stock taxed as personality to the owners thereof?
6. What taxes are levied on the receipts of the companies, whether gross or net?
7. Where and how is rolling stock taxed?
8. How are the local taxes levied, or the general taxes locally apportioned as between states, counties or towns?
9. What process of appeal is provided in case of excessive assessment?





Published Every Friday.

CONDUCTED BY

S. WRIGHT DUNNING AND M. N. FORNEY.

## CONTENTS.

ILLUSTRATIONS:	Page.	Personal:	Page.
Electric Signals at the Paris Exhibition.....	93, 94	Traffic and Earnings.....	103
Brake Diagrams.....	99, 100	Railroad Law.....	104
CONTRIBUTIONS:		The Scrap Heap.....	104
The Big Tunnel on the Dom Pedro Segunda Railroad.....	93	Transportation in Congress.....	102
The Use of Iron Cars.....	93	Train Accidents in January.....	95
The Paris Exhibition—Electricity in Railroad Engineering.....	93	ANNUAL REPORTS:	
EDITORIALS:		Illinois Central.....	106
The Discussion of the Reagan Bill.....	98	Dayton & Southeastern.....	106
Mr. Westinghouse's Latest Improvements in Continuous Brakes.....	99	Worcester & Nashua.....	106
EDITORIAL NOTES.....	100	MISCELLANEOUS:	
GENERAL RAILROAD NEWS:		Argument against the Reagan Bill.....	96
Meetings and Announcements.....	103	Determination of Rates for Interchanged Traffic.....	97
Elections and Appointments.....	103	Methods of Railroad Taxation.....	97
		The Development of Local Passenger Traffic.....	100
		Who is a Passenger?.....	102

## EDITORIAL ANNOUNCEMENTS.

**Passes.**—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

**Addresses.**—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

**Advertisements.**—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

**Contributions.**—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

## THE DISCUSSION OF THE REAGAN BILL.

When this bill "to regulate interstate commerce, and to prohibit unjust discriminations by common carriers," passed the Lower House of Congress, we complained of the utterly inadequate discussion of a measure assuming to regulate one of the most complicated, least understood and important branches of industry in the country. Two hours, we believe, were all that were given to it, and there was opportunity only for five-minute speeches in opposition to it, though by grace some members were allowed to extend their time somewhat. We then urged that the railroad companies should present evidence and arguments concerning the effect of the provisions of the bill while it should be pending before the Senate, that it might not pass by default, as it were, as apparently it had done in the House.

This has been done. A sub-committee of the Senate Committee on Railroads has received representatives of the railroads and heard their arguments, some of which have been printed and thus made accessible to all senators who care to know anything of the effect of the bill before they vote on it. Indeed, we do not know when before so many really well-informed men have given their opinions on proposed railroad legislation. It is true that the arguments have been chiefly by Eastern railroad men, but that, doubtless, was because they were on the ground, as it were, and really represented the whole railroad interest, the effect of the proposed law being in no way sectional, though very different on different roads.

Among those whose names we remember who have appeared before the Senate sub-committee are Mr. Chauncey M. Depew, of the New York Central & Hudson River; Mr. G. R. Blanchard, of the New York, Lake Erie & Western; Mr. William P. Shinn, in behalf of

the Pennsylvania, and Mr. Albert Fink, Trunk Line Commissioner, though not appearing as such at Washington, but rather as an independent observer and student, urging his own views as to what legislation should be avoided and especially as to what should be adopted; for Mr. Fink does not appear as an opponent of all Congressional legislation, but rather demands some as necessary for the welfare of the railroads and the community alike.

And what to us seems most noticeable in the whole conduct of this opposition by the railroads, is their apparent willingness to have something done—a thorough investigation, if nothing more. Mr. Depew, of New York Central, urged the appointment of an investigating committee; Mr. Blanchard, of the Erie, also heartily approved it, and Mr. Fink, expressly disclaiming any authority or approval by any railroad managers, however, goes so far as to present the outlines of a bill intended to cover the whole competitive railroad traffic, and subjecting it virtually to a certain amount of governmental restraint, at the same time that it puts it under governmental protection.

While then the bill has been actively opposed by the railroads since it passed the House, there has been scarcely any exception taken to the declared objects of the bill, though there has been and could not fail to be by any one familiar with the fundamental principles of transportation rates a protest against some of its assumptions as to what constitutes an "unjust discrimination." It is not probable, however, that what the framers of the bill actually intended to effect by it is anything more than the prohibition of discriminations of the kind that the railroad managers and owners deplore more than any one else, because they suffer by them more than any one else. At all events, the chief discriminations of which the public has a right to complain the railroad men are willing to take almost any steps, not fatal to their general traffic, to prevent, and the arguments of some of them before the Senate Committee indicate that they will not reject government cooperation to this end, if rationally and effectively given.

The inability of the railroads to control these matters themselves arises not so much from their power as from their want of power, not from their exceptional privileges but from their exceptional disabilities. The first-class rate from New York to Chicago is 75 cents per 100 lbs. to-day, but it may be 15 cents to-morrow, making terrible discrimination between the merchant who laid in his spring stock of goods last week and the one who will ship his next week. But why is this possible? The railroads do not wish it to be, and they have agreed that it shall not be; but this particular agreement cannot be enforced by law; and so with nearly all the effective means for maintaining regular and non-discriminating rates. The community has feared that the power of combination among the transportation companies might be exercised oppressively, and so it has refused it. Doubtless the circumstances are possible in which a combination might be made to oppress, and the community is justified in not giving its sanction to its unlimited exercise. But that should not prevent the granting of such sanction for combinations for special purposes and with provision for guarding strictly the interests of the community.

The truth is that in this country there would be scarcely any danger of oppressively high through freight rates, if all the railroads were owned and managed by a single company. The competition of lake and river, and for the great bulk of the tonnage carried the prices attainable and the margin over the cost of production, limit the rates to amounts very much below the average required to make a very moderate return on the investments in the roads. How this is done is very plainly shown in the admirable arguments before the Senate Committee by Mr. Blanchard and Mr. Fink, which are crowded with illustrations of the various influences that compel the modification of through rates. If all the lines between Chicago and New York were owned by a single company, it would not be possible to get any more on the great bulk of the freight carried eastward than the 35 and 40 cents per 100 pounds established by the tariff of Nov. 25 and now in force. Indeed, probably the regular rate would be lower, as there would then be no lower irregular rates such as those at which most of the freight has been carried this winter, and but for which very likely it would have been necessary to reduce the regular rates in order to get a fair amount of freight. It might then be perfectly safe for the community to give their aid to the railroads to enable them to maintain through rates without requiring any special guarantees as to the moderation of those rates; but naturally this is a matter in which the public does not wish to take any risks. If it gives the railroads any additional power, it will ask something in return, and it may ask not only for a check in place

of the competition which it gives up, but for limitations such as it never has enjoyed before. And, if the railroads are to gain anything by their new power, they may find their advantage in giving what is asked of them. It may be made a contract by which both parties gain. And it is not likely to be made unless one party, the public, feels sure that it will gain. Possibly it may force unfavorable legislation upon the railroads: the railroads certainly will not force any upon the public.

It may be premature to consider any of the conditions likely to attend any national legislation avowedly intended to prevent any reduction of railroad rates. In view of the feeling of a large part of the community and much of the recent state legislation, it would seem absurd to expect anything of the kind. Yet virtually the object or one of the principal objects of the Reagan bill is just this; for certainly it cannot contemplate that the fluctuations and discriminations of which it complains will be removed by making the lowest rate the general rate; and if not, then the general rate must be something between the lowest and the highest rate, and the lowest as well as the highest rate will be abolished and virtually forbidden by law. But it is not impossible that the public may learn finally that regularity, uniformity and moderation in rates are better for it than constant fluctuations and irregularities, in the course of which some few shippers at certain times get their freight carried at about half the bare cost, while at the same time others pay one-half more. It needs to be distinctly understood, however, that the present average through rates are extremely low, and that they do not contribute their fair share toward the interest on the money invested in the roads. If it were understood, doubtless there would still be an important part of the population which would protest against any advance of through rates. Equitable or inequitable, those who have their bulky produce carried 2,000 miles at the bare cost of hauling, or less, will prefer to continue this arrangement with considerably higher local charges on the roads which they use to a slight advance in through rates and a reduction in local. They wish that to be cheapest which they buy the most of. A farmer 50 miles from Kansas City pays local rates over 50 miles of road and through rates over 1,400. You will not satisfy him by reducing local rates and advancing through rates 5 per cent. Doubtless he would be glad to agree that the through rate should be regular and uniform, provided it should not be higher on the average. Instead of having half the traffic carried at 30 cents and half at 60 cents per 100 lbs., he will consent that it all shall be carried at 45 cents. It is where the people depend less upon through than local rates that there is a demand for a closer approximation of the two, and a bitter complaint of through rates which leave no margin of profit to pay interest on the investment. The New York farmer complains that the low through rates not only leave the local traffic to pay the whole or a unfairly large share of the interest on the investment, but that they destroy the value of his property by putting the Illinois and Iowa farmer's grain and meats in the Eastern markets at about the same cost for freight as he must himself pay to reach the same markets. He would shift as much as possible of net earnings upon the through traffic; the Western farmer as little as possible. He is nearer right than the Western farmer, for the limits of the possible in this case are very narrow. A very small proportion of the through freights will be profit, and local rates must continue to be much higher in proportion unless railroad profits are very greatly reduced.

All alike, but merchants especially, are, however, interested in limiting as much as possible the fluctuations of rates and the special reductions which individuals frequently secure when railroads compete without restriction. It will be the hope of checking this, if anything, which will lead the public to consent to giving legal sanction to a combination to maintain through rates.

The legislation proposed by Mr. Fink as a substitute for the Reagan bill is to add to the first two sections of that bill (one prohibiting discriminations of rates to different persons at the same time and the other forbidding rebates), provisions in substance as follows:

"SEC. 3. That all competing railroad companies shall jointly establish a tariff from all competing points.

"SEC. 4. That the tariff so established shall be submitted to a Commission of Experts appointed by the federal government, and if they find that the tariff is just and equitable, and based upon correct commercial principles, and not in violation of the common law governing common carriers, then such tariff shall be approved, and shall become the law of the land until changed in the same manner by the same authority.

"SEC. 5. In cases where railroad companies cannot agree upon such tariffs, or upon any other questions such as might lead to a war of rates between railroad companies, the questions of disagreement shall be settled by arbitration, the decision of the arbitrator to be enforced by the United States courts."



This would not only sanction the combination of the railroads to maintain rates, but would compel it; but it recognizes the necessity of giving the public a check in the place of the supposed one of competition abandoned. The Commission of Experts, representing the public, would have a veto on any rates made, and, we may assume, would be sure not to permit any unreasonably high. This would subject the through rates of our railroads to a control very similar to that which the French government exercises over all railroad rates, all of which are proposed by the railroad companies and submitted to the Minister of Public Works for his approval, without which they cannot go into effect, and that whether they are higher or lower than the existing rates. Mr. Fink justifies the compulsory feature of his proposition by showing that the object of the Reagan bill—regular and uniform rates—cannot be attained without the simultaneous and uniform action of all the competing companies, and so, to secure the end, this combined action must be required.

Mr. Fink's argument, however, does not pursue this subject far, but is mainly devoted to setting forth the injustice and inadequacy of the bill that has passed the House, which it does in a masterly way, concluding that "it would not remove any of the difficulties of the transportation business, but would aggravate them all."

Regarding the probable fate of the bill it is probably too early to judge. To some of the railroad men who were in Washington last week it seemed quite likely to pass; but a telegram to the New York Times, Tuesday, said that it seemed probable that this bill, and that authorizing railroad companies to do a general telegraph business, would be referred to a special commission to sit during the recess, examine the subject thoroughly, and report to the next Congress at its first session. This would seem to be a wise disposition to make of it. The extent, character and effects of the evils complained of need to be set forth on a basis of testimony, to say nothing of the study of the provisions by which they may best be avoided.

#### MR. WESTINGHOUSE'S LATEST IMPROVEMENT OF CONTINUOUS BRAKES.

In an article published in the *Railroad Gazette* of Jan. 17 of this year, attention was called to the fact that the experiments of Mr. Westinghouse and Captain Galton had proved conclusively—that what has for years been suspected and indicated by others—that the supposed law that "friction during motion is independent of the velocity of motion" is not true. Their experiments showed, on the contrary, that the friction of brake-shoes on the wheels, and of the wheels sliding on the rails, diminished very rapidly as the speed increased, and also that the friction was less a few seconds after the application of the brake-shoes to the wheels than it was at first. The following table gives the results of one series of these experiments:

DYNAMIC OR SLIDING FRICTION	Steel tires on steel rails.		Co-efficients of friction.		H.
	CAST-IRON BRAKE-SHOES ON STEEL TIRES.		Co-efficients of friction.		
	Velocity.		At commencement of experiment.....		
	Miles per hour.....	Feet per second.....	A	B	
	1 to 3	1 to 3	0.350	0.342	0.342
	3 1/2	15	0.313	0.313	0.288
	4	17	0.305	0.305	0.272
	5	22	0.282	0.282	0.250
	6	26	0.271	0.271	0.242
	8	35	0.263	0.263	0.230
	10	44	0.252	0.252	0.218
	12	53	0.244	0.244	0.200
	15	67	0.232	0.232	0.182
	20	88	0.214	0.214	0.164
	25	110	0.198	0.198	0.148
	30	132	0.182	0.182	0.132
	35	154	0.166	0.166	0.116
	40	176	0.150	0.150	0.100
	45	200	0.134	0.134	0.084
	50	222	0.118	0.118	0.068
	55	244	0.102	0.102	0.052
	60	266	0.086	0.086	0.036
	65	288	0.070	0.070	0.020
	70	310	0.054	0.054	0.004
	75	332	0.038	0.038	0.000
	80	354	0.022	0.022	0.000
	85	376	0.006	0.006	0.000
	90	398	0.000	0.000	0.000
	95	420	0.000	0.000	0.000
	100	442	0.000	0.000	0.000
	105	464	0.000	0.000	0.000
	110	486	0.000	0.000	0.000
	115	508	0.000	0.000	0.000
	120	530	0.000	0.000	0.000
	125	552	0.000	0.000	0.000
	130	574	0.000	0.000	0.000
	135	596	0.000	0.000	0.000
	140	618	0.000	0.000	0.000
	145	640	0.000	0.000	0.000
	150	662	0.000	0.000	0.000
	155	684	0.000	0.000	0.000
	160	706	0.000	0.000	0.000
	165	728	0.000	0.000	0.000
	170	750	0.000	0.000	0.000
	175	772	0.000	0.000	0.000
	180	794	0.000	0.000	0.000
	185	816	0.000	0.000	0.000
	190	838	0.000	0.000	0.000
	195	860	0.000	0.000	0.000
	200	882	0.000	0.000	0.000
	205	904	0.000	0.000	0.000
	210	926	0.000	0.000	0.000
	215	948	0.000	0.000	0.000
	220	970	0.000	0.000	0.000
	225	992	0.000	0.000	0.000
	230	1014	0.000	0.000	0.000
	235	1036	0.000	0.000	0.000
	240	1058	0.000	0.000	0.000
	245	1080	0.000	0.000	0.000
	250	1102	0.000	0.000	0.000
	255	1124	0.000	0.000	0.000
	260	1146	0.000	0.000	0.000
	265	1168	0.000	0.000	0.000
	270	1190	0.000	0.000	0.000
	275	1212	0.000	0.000	0.000
	280	1234	0.000	0.000	0.000
	285	1256	0.000	0.000	0.000
	290	1278	0.000	0.000	0.000
	295	1300	0.000	0.000	0.000
	300	1322	0.000	0.000	0.000
	305	1344	0.000	0.000	0.000
	310	1366	0.000	0.000	0.000
	315	1388	0.000	0.000	0.000
	320	1410	0.000	0.000	0.000
	325	1432	0.000	0.000	0.000
	330	1454	0.000	0.000	0.000
	335	1476	0.000	0.000	0.000
	340	1498	0.000	0.000	0.000
	345	1520	0.000	0.000	0.000
	350	1542	0.000	0.000	0.000
	355	1564	0.000	0.000	0.000
	360	1586	0.000	0.000	0.000
	365	1608	0.000	0.000	0.000
	370	1630	0.000	0.000	0.000
	375	1652	0.000	0.000	0.000
	380	1674	0.000	0.000	0.000
	385	1696	0.000	0.000	0.000
	390	1718	0.000	0.000	0.000
	395	1740	0.000	0.000	0.000
	400	1762	0.000	0.000	0.000
	405	1784	0.000	0.000	0.000
	410	1806	0.000	0.000	0.000
	415	1828	0.000	0.000	0.000
	420	1850	0.000	0.000	0.000
	425	1872	0.000	0.000	0.000
	430	1894	0.000	0.000	0.000
	435	1916	0.000	0.000	0.000
	440	1938	0.000	0.000	0.000
	445	1960	0.000	0.000	0.000
	450	1982	0.000	0.000	0.000
	455	2004	0.000	0.000	0.000
	460	2026	0.000	0.000	0.000
	465	2048	0.000	0.000	0.000
	470	2070	0.000	0.000	0.000
	475	2092	0.000	0.000	0.000
	480	2114	0.000	0.000	0.000
	485	2136	0.000	0.000	0.000
	490	2158	0.000	0.000	0.000
	495	2180	0.000	0.000	0.000
	500	2202	0.000	0.000	0.000
	505	2224	0.000	0.000	0.000
	510	2246	0.000	0.000	0.000
	515	2268	0.000	0.000	0.000
	520	2290	0.000	0.000	0.000
	525	2312	0.000	0.000	0.000
	530	2334	0.000	0.000	0.000
	535	2356	0.000	0.000	0.000
	540	2378	0.000	0.000	0.000
	545	2400	0.000	0.000	0.000
	550	2422	0.000	0.000	0.000
	555	2444	0.000	0.000	0.000
	560	2466	0.000	0.000	0.000
	565	2488	0.000	0.000	0.000
	570	2510	0.000	0.000	0.000
	575	2532	0.000	0.000	0.000
	580	2554	0.000	0.000	0.000
	585	2576	0.000	0.000	0.000
	590	2598	0.000	0.000	0.000
	595	2620	0.000	0.000	0.000
	600	2642	0.000	0.000	0.000
	605	2664	0.000	0.000	0.000
	610	2686	0.000	0.000	0.000
	615	2708	0.000	0.000	0.000
	620	2730	0.000	0.000	0.000
	625	2752	0.000	0.000	0.000
	630	2774	0.000	0.000	0.000
	635	2796	0.000	0.000	0.000
	640	2818	0.000	0.000	0.000
	645	2840	0.000	0.000	0.000
	650	2862	0.000	0.000	0.000
	655	2884	0.000	0.000	0.000
	660	2906	0.000	0.000	0.000
	665	2928	0.000	0.000	0.000
	670	2950	0.000	0.000	0.000
	675	2972	0.000	0.000	0.000
	680	2994	0.000	0.000	0.000
	685	3016	0.000	0.000	0.000
	690	3038	0.000	0.000	0.000
	695	3060	0.000	0.000	0.000
	700	3082	0.000	0.000	0.000
	705	3104	0.000	0.000	0.000
	710	3126	0.000	0.000	0.000
	715	3148	0.000	0.000	0.000
	720	3170	0.000	0.000	0.000
	725	3192	0.000	0.000	0.000
	730	3214	0.000	0.000	0.000
	735	3236	0.000	0.000	0.000
	740	3258	0.000	0.000	0.000
	745	3280	0.000	0.000	0.000
	750	3302	0.000	0.000	0.000
	755	3324	0.000	0.000	0.000
	760	3346	0.000	0.000	0.000
	765	3368	0.000	0.000	0.000
	770	3390	0.000	0.000	0.000
	775	3412	0.000	0.000	0.000
	780	3434	0.000	0.000	0.000
	785	3456	0.000	0.000	0.000
	790	3478	0.000	0.000	0.000
	795	3500	0.000	0.000	0.000
	800	3522	0.000	0.000	0.000
	805	3544	0.000	0.000	0.000
	810	3566	0.000	0.000	0.000
	815	3588	0.000	0.000	0.000
	820	3610	0.000	0.000	0.000
	825	3632	0.000	0.000	0.000
	830	3654	0.000	0.000	0.000
	835	3676	0.000	0.000	0.000
	840	3698	0.000	0.000	0.000
	845	3720	0.000	0.000	0.000
	850	3742	0.000	0.000	0.000
	855	3764	0.000	0.000	0.000
	860	3786	0.000	0.000	0.000
	865	3808	0.000	0.000	0.000
	870	3830	0.000	0.000	0.000
	875	3852	0.000	0.000	0.000
	880	3874	0.000	0.000	0.000
	885	3896	0.000	0.000	0.000
	890	3918	0.000	0.000	0.000
	895	3940	0.000	0.000	0.000
	900	3962	0.000	0.000	0.000
	905	3984	0.000	0.000	0.000
	910	4006	0.000	0.000	0.000
	915	4028	0.000	0.000	0.000
	920	4050	0.000	0.000	0.000
	925	4072	0.000	0.000	0.000
	930	4094	0.000	0.000	0.000
	935	4116	0.000	0.000	0.000
	940	4138	0.000	0.000	0.000
	945	4160	0.000	0.000	0.000
	950	4182	0.000	0.000	0.000
	955	4204	0.000	0.000	0.000



hence also with the air reservoir when the triple valve is open), while the branch *G* is in communication with the brake-cylinder." *F* is a valve which fits into a conical seat at *D*, the right-hand end at *E* being cylindrical in form and fitting into the opening at *I*, while on the left of *E* it has a feathered end. It is evident from the engraving that when the valve is in the position shown, air can pass from the reservoir through the branch *E* and passage *I* to the passage *G*, and thence to the brake cylinder. If the valve is moved from its seat at *D* toward the right, so as to close the passage *I*, then communication between the air reservoir and the brake cylinder will be shut off, and air can flow from the latter through the passage *G*, through *D*, and then escape through the openings, *H H*. It remains to show how this valve is operated.

*B* is a spindle with a collar against which a spiral spring, *C*, bears and forces it toward the left of the engraving, away from the valve *E* and against the *T*-lever *A*. This lever is connected by a link, as shown in fig. 1, with the lever *C*, and has two points, *a* and *a'*, fig. 2, which become fulcrums of the lever when the strain on the link, shown in fig. 1, is either upward or downward. Thus, suppose the strain on the link, which is connected to the hole in the *T*-lever shown at *A*, is downward, the latter would be pressed against the case at *a*, which would then become the fulcrum, and would be forced away from the case at *a'*. It is also clear that when this occurs the spindle *B* would be forced toward the valve *F*, which would thus be raised, provided the force exerted on the *T*-lever were sufficient to overcome the tension of the spring *C*. It is also plain that, if the strain of the link on the *T*-lever were upward, then *a'* would become the fulcrum, but the action on the spindle *B* would be the same in each case.

If then the tension of the spring *C* is adjusted so that the valve *E* will be opened when the frictional resistance, or the hold, of the brake-shoe *A*, fig. 1, becomes such as to exceed that which has been determined upon as desirable, it is evident that the valve *E* will then be opened and that some of the air in the brake cylinder would thus be permitted to escape through the openings at *D* and *H H*, and that the pressure would thus be regulated or reduced as the speed is diminished.

To make the action of this apparatus quite clear, let it be supposed that a train is running at a speed of 60 miles per hour and that the brakes are then to be applied and the train stopped in the shortest possible distance. The table above shows that, at that speed, the co-efficient of friction or the frictional resistance of the brake-shoes on the wheels is only about one-sixteenth the pressure on them. As it requires a resistance of about a fifth of the weight on the wheels to slide them, a pressure of three times the weight on the wheels may be applied to the brake-shoes. As the speed diminishes the hold of the shoes increases, and as soon as the strain which is exerted on the link *B*, fig. 1, and is transmitted by the lever *C* to the *T*-lever *A*, fig. 2, becomes greater than the tension of the spring *C*, the valve *F* will be moved so as to close the opening at *I*, and thus shut off communication between the reservoir and the brake cylinder, and at the same time it will be opened at *D*, and thus permit some of the air in the reservoir to escape through *H H*. In this way the pressure on the brakes is regulated, so that the frictional resistance of the brake-shoes is maintained at a uniform amount or intensity.

The following table, taken from *Engineering*, gives the particulars of the stops made with this apparatus:

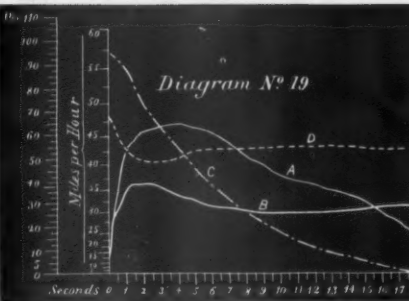
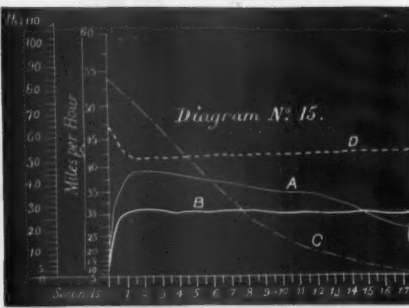
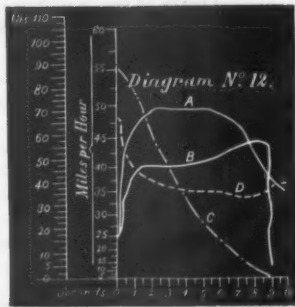
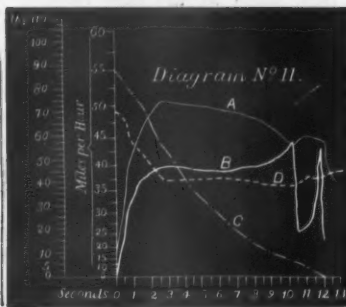
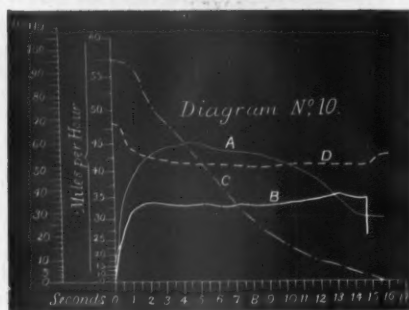
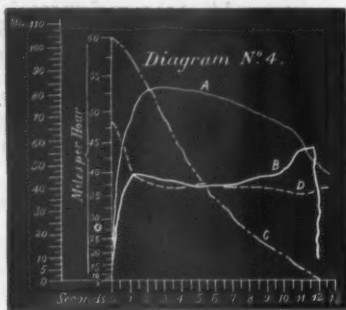
Number of stop	Speed in miles per hour	Gradient	Time occupied in making stop	Distance run in making stop in yards	Equivalent distance for a speed of 60 miles per h. in yards
2	45	Level	Not taken	98	119
3	53	"	13	171	119
4	60	Up 1 in 264	12 3/4	171	119
5	60	Up 1 in 311	12 3/4	167	116
8	55	Level	13	185	161
9	60	"	14 1/4	214	149
10	57	Up 1 in 264	15 1/2	206	159
11	55	Down 1 in 264	13	171	141
12	55	Up 1 in 330	10 1/2	141	117
13	62	Down 1 in 264	Not taken	176	114
15	54	Level and down 1 in 176	18	227	195
19	57	Down 1 in 406	18 1/2	223	171

Of these, *The Engineer* says: "When we add that the quickest stop ever brought about by a brake was effected, and that the conditions under which this rapid arrest of a vehicle in motion was accomplished may be easily reproduced, in the every-day work of a railway, it will be understood that the experiments in question possess no little interest."

The diagrams annexed, of the stops, are copied from *Engineering*, and are numbered to correspond with the

numbers of the stops in the table. These diagrams are explained as follows by that journal:

"In each diagram the thin full line *A* shows by its height above the base line the pressure on the brake-blocks, this pressure in this particular instance being equal to 240 times the pressure in pounds read off from the vertical scale annexed. The thick full line *B* is the tangential force or fric-



tional hold of the brake-blocks, the constant number by which the scale pressure is to be multiplied being in this case 60. The dotted line *C* is the speed line, while the thick dotted line *D* shows the weight on the springs of the rear wheels, and indicates how a portion of the weight is transferred from the rear to the front wheels on the application of the brake taking place.

"The constant multiplier for the lines *A* and *B* being 240 and 60 respectively, it follows that a coincidence of these lines would indicate a tangential force or frictional hold equal to 4%, or 1/25 of the pressure on the brake-blocks. All the diagrams show that at the higher speeds the proportion

of frictional hold obtained is a much smaller percentage than this, but in each case a point is reached where the lines *A* and *B* cross each other, the former falling below the latter, and it thus being shown that under the circumstances existing last Monday week, there was obtained at low speeds a frictional hold on the wheels exceeding 25 per cent. of the pressure on the brake-blocks.

"The effect of the reducing-valve is shown by the rapid fall of the line *A* as the speed decreases, the pressure in the brake cylinder at the end of some of the stops being less than half that existing at the commencement. That this reduction of pressure is what is required is clearly shown by the uniform height of the tangential force line *B*, this being particularly noticeable in diagrams 10, 15 and 19. Diagram No. 11 shows that, during the experiment to which it refers, skidding took place about 1 1/2 seconds before the end of the stop, the reducing-valve in this instance apparently not having released the air fast enough to prevent a somewhat sudden rise in the tangential force line *B*, and hence skidding having resulted. In some of the experiments the reducing valve absolutely prevented skidding, while in others there was a very short period of skidding just prior to the actual stop, this latter result being, however, evidently avoidable by a better adjustment of the apparatus, and the effect of the valve in insuring the smooth action of the brake being noticeable in all the trials."

It should be added that this improvement in brakes will make a revision necessary of some of the conclusions contained in the article on "The Distance in which a Train Can be Stopped by Brakes," published in the *Railroad Gazette* of Jan. 17 of this year.

This invention of Mr. Westinghouse is altogether the most important improvement in the construction of brakes made since he devised his automatic system, and the experiments which he and Captain Galton have made are unequaled in brilliancy in the whole history of railroad engineering. The application of compressed air stored up in the engine to the operation of continuous or train-brakes marked the first epoch in their development. The next was the storing up of a supply of compressed air on each car, so that it only required to be released to apply the brakes. The third and last great step in perfecting continuous brakes is this latest invention of Mr. Westinghouse which we have described.

LAKE RATES are not usually quoted in midwinter, but they are this winter, as vessels in Chicago harbor are taking in cargoes now to take down the lakes as soon as navigation opens, storing it meanwhile. The latest rate reported is 6 1/2 cents a bushel for corn to Buffalo, of which probably 1 1/2 cents should be allowed for storage. What vessels there are at Chicago are rapidly getting filled, and as the elevators also are fuller than ever before, with grain continuing to come forward, the vessel-owners count on such a pressure of traffic when navigation opens as will enable them, for a while at least, to get better rates than they have had in the spring for the past two or three years. From the reports of new vessels under way, however, it would appear that the tonnage on the lakes will be increased by next fall, which is an indication that not everybody has lost money by the low rates of the past three years. The railroads seem to be preparing to make greater use of their lake connections, which would seem to be necessary if they are to keep up their share of the grain traffic in summer. The Anchor Line, running in connection with the Philadelphia & Erie, is reported to have bought two of the largest and finest sailing vessels on the lakes, which will sail or be towed, as may be convenient. The steamers of the Northern Transit Company, which have formerly run to Ogdensburg, in connection with the Ogdensburg & Lake Champlain and the Central Vermont, are to run next season to Sarnia, to connect with the Grand Trunk. They will probably be able to make twice as many trips to Sarnia as to Ogdensburg, thus increasing the steamer capacity for carrying from Chicago.

BALTIMORE'S COMMERCE, and especially the great increase in its grain receipts of late years, are usually ascribed almost wholly to the Baltimore & Ohio Railroad, which had been pushing out connections and securing alliances west of the Ohio River. A good many people do not seem to know that Baltimore has any other railroad connection with the West, and very few are aware that the shortest line from Baltimore to Chicago is by the Northern Central and the Pennsylvania Railroad. This line, moreover, seems to bring Baltimore a large share of its freight, as the following statement of the number of bushels of wheat and corn received at Baltimore by the two roads in the past three years (which we take from the *Baltimore Journal of Commerce*) will show:

	Baltimore & Ohio.	Northern Central.
1876	18,875,194	4,825,132
1877	15,214,011	8,601,570
1878	18,824,229	14,485,900

The increase in this period seems to have been wholly by the Northern Central. It brought 18.9 per cent. of the whole in 1876 to the Baltimore & Ohio's, 65.9 per cent. (Not all comes by these two roads.) In 1878 the Northern Central's percentage was 36.3, and the Baltimore & Ohio's 47.1. Of course the Northern Central's grain nearly all comes to it from the Philadelphia & Erie and the Pennsylvania roads, the first of which receives from lake vessels and can compete with the Erie Canal about as well as the New York Central and the Erie do.

#### The Development of Local Passenger Traffic.

BY FRANCIS J. LEE.

SOCIAL CONDITIONS WHICH INFLUENCE THE DEVELOPMENT OF LOCAL PASSENGER TRAFFIC.

An investigation into the characteristics of railway passenger traffic with the object of obtaining its com-



ponent and distinctive features clearly defined in an individual form, will elucidate at an early stage the existence of one prominent feature, representing a large percentage of the passenger earnings, and worthy of studious thought and careful consideration. The subject of the following remarks is a feature in local passenger traffic of the nature in question. It involves the satisfactory solution of many obstacles found to exist at the present time in the conduct of traffic by the majority of our railways. Further, it partakes of a large amount of originality in its discussion, compilation, application to practical business necessities, having concurrent with its own development that also of a large section of society living within the influence exerted by railways. Perhaps to a great extent it foretells the gradual adaptation of the railways to the performance of services to the public in a way similar to those rendered by the postal and telegraph systems; and, as civilization progresses and population increases it is natural to find that a subject of this kind is open to much original investigation of a special character and closely connected with the welfare of society. All questions of passenger traffic have necessarily a social aspect; probably this should be the primary one. The running of a passenger train irrespective of public convenience and other social considerations would no doubt be an easy task for the time-table compiler, but would hardly pay the company employing him. The social aspect must come first. Equally so in regard to the conditions of passage by passenger trains; the mere formulation of a series of iron-clad conditions irrespective of public feeling, public comfort, or public necessity, would inevitably result in a well-earned unpopularity and form good ground for the development of a craving for some competition as a relief to the sufferers. The traffic on any line will certainly become most lucrative where the public are primarily considered and the conservatism of office is tempered with judicious liberality. Public comfort should be the primary object, and the social aspect of the question given due prominence, not made subordinate to any other. The social aspect of the periodical, season or commutation ticket travel which exists at present and which may hereafter be developed is an interesting one. It involves the existence of a completely comprehensive, equitably proportioned, non-discriminating system. Its value to the public is indicated by the wide and growing demand for provisions which it alone is calculated to supply.

The demand which exists in the community for a periodical, or, as it is sometimes called, a season or commutation ticket system, is due to a want very generally felt and widely expressed, for a code of regulations and a proportionate scale of charges suitable to the various contracts to be made with a company for a large or small number of miles on its line, for longer or shorter periods. A mileage charge, irrespective of the customer's making one hundred, one thousand or ten thousand miles, or the absence of a proportionate mathematically accurate scale, capable of proof as equitable on commercial principles, is a most effectual stop to the progress and development of local interests, both for the community and the company so situated. Freight and passenger traffic both suffer materially thereby. As regards the sensation produced upon commercial men by such a condition of affairs, it would only be equalled by that which would result from their inability to obtain better terms from a manufacturer or wholesale house for an order covering thousands of dollars and one limited to hundreds. In other words, any system of this kind, to be socially successful, must also be commercially sound.

The ordinary local fare tariff is not suited for constant travel, and there is really but one true way of meeting the actual requirements of the public in all their varied social forms of application, and that is by means of a carefully adjusted scale of proportionate charges varying on a basis in which the two main fundamental elements are—one, the number of miles or number of journeys to be made; the other, the period to be occupied in making them.

It is the admirable facility by which the postal system is operated which has had so much to do with its wonderful growth and utility. The sensation of being able to make a constant use of it, not merely an occasional one, the equitable charges proportionate to weight and character of inclosures and the progressive improvements which have been feasible from time to time in its provisions, one and all combine to make it a highly satisfactory exhibition of a system socially based and perfected. Is there any progress for railways in a similar way? It would certainly appear so if we may judge by the remarkable changes which have taken place in the course of time between the early cost of freight transportation and the latest fairly remunerative cost for that branch of traffic. On the ground alone that the tendency is toward the reduction in the actual cost of haulage and that time will effect much in that direction, there is sufficient to warrant the prediction that the future of passenger transportation is equally hopeful. Taking things, however, as they now are, if the amount of business to be transacted has any influence at all in reducing the price of production or cost of operation, as has been found in the freight business, then there should exist a wide margin in the field of local passenger travel for accomplishing equally marked results. Experiment would hardly be necessary to prove the almost natural vent of mankind to move constantly over the face of mother earth and intermingle socially, commercially, and otherwise; to conduct inter-communications in person in preference to any other method. Experiment would also undoubtedly prove that the natural result of such action would be to promote a greatly increased employment of the most economical and the most time-saving means of transportation. Society, like *Oliver Twist*, is constantly crying for more. There is a conservative timidity, however, in the action of railways toward any bold experimental research, partaking very much of the

formality of the action of governments as contrasted with that under individual enterprise. As an example of this conservatism which is so strongly marked in the history of railway management, we have no better one than another most important feature in the development which may be accomplished in local passenger traffic. The case of local excursion travel is referred to. With what reluctance was it that the great English lines were compelled to admit the entirely distinct character of this business and its independence of the ordinary local travel. Surprise of no ordinary character was displayed when it was discovered that something more than sheer necessity induced the public to take advantage of any means of rapid inter-communication; and now it has grown up to vast proportions in England, until it affords one of the best and richest sources of revenue. It was an ignorance of the social aspect of the question that delayed the experimental effort necessary to test the practical value of the principle—just as it is now in other kindred cases elsewhere. It would not be too much to assert that there are roads that have been so far ignorant of what their social capabilities are as to have conducted traffic for years regardless of the adoption of any thorough system of local excursion traffic, and there are; it is well known, existing to this day staunch old conservative traffic men who cannot gauge the wants and capacities of society for social travel and its peculiarities. Experiment alone will satisfy them, and too often, like all apologetic prophets, they will exclaim when once a clear and decisive proof has been forced upon them, and conviction is inevitable, that they thought so too, and rapidly draw conclusions as simple common-sense deductions from a self-evident fact which they assume as an ordinary event. History is very valuable in this way where it can be made into a practical compass to steer us on our way to progress and give us a chart whereby to avoid the repetition of old errors. The development of passenger traffic, then, to large and constantly-growing proportions requires that we should, above all things, get our mental vision cleared from any ancient errors and make up our minds to become social observers and experimentalists, working inductively rather than deductively. We must strive to arrive at the goal of an absolutely-comprehensive system, whereby the wants of the community may be provided for and stimulated. We must not wait to have progress forced upon us but go toward it, even if we stumble occasionally on the way. Let us acknowledge the rights, examine the proclivities, test the capacity of society for all we have to put up to its bid in the world's auction market of necessary commodities.

Arbitrary tariff legislation has a great deal to account for to society in the production of this conservative reluctance on the part of railways to extend a wider measure of liberal and productive facilities. Instead of affording due protection to lines as a necessary safeguard against any abuse which may result from a relaxation by them in the departure from regular methods, as a rule, a form of opposition is sustained in support of unjust demands, turning the favor of today into a demand on the morrow and ignoring any rights to relax or extend the rules of management in a voluntary way *pro bono publico*.

Opposition engenders opposition. An arbitrary tariff system results in an unaccommodating one, opposed to any effects which the leverage of self-interest and public opinion would otherwise achieve unaided. Experience has proved in railway history that greater facilities have been presented where governmental interference has stopped short and left results to work out harmoniously.

The spur of public opinion and social necessity may often need to be applied, and strong organizations, commissioners, etc., may be required to apply it; but beyond this, evil will result if control is attempted by any form of authority not in a position to see into, out-side of, and all around a traffic question.

The scientific and practical conduct of railroad business requires a life-long study; it is a profession of itself, and sad havoc will be made by any who, ignorant of its principles, attempt to direct its operations.

Allowing for the social importance of the question, is there any way in which this can be accommodated profitably? There is of course a point below which it cannot pay to go, and the more done below that point the worse.

The object is to find and adjust continually the profit point in traffic. The point to adjust in this matter involves the answer called for by the following inquiry:

Will it pay to offer the public resident on a line a proportionate scale of charges less than regular tariff fares on a commercial basis suited to a great variety of demands which will be found to exist when such inducements become known?

Provided extra train service is not required and ordinary local travel can be protected, will it not, if such is feasible, increase the percentage of net earnings and warrant the adoption of such a system as is here suggested? There is no necessity with an average train service for any extra expenditure on that account, and the protection of ordinary traffic is essentially one dependent upon the mode of handling the business, and is under control and voluntary to a great extent. It may always be assumed and is capable of experimental proof that where two distinct classes of travel exist, one is required to supply one form of social requirements distinct from and independent of the other. It is in fact only an entire misapprehension of the characteristics of the two that would lead to any confusion or loss from want of a well-defined line of demarcation between them.

The characteristics of what we understand by ordinary travel are represented by a merely occasional demand; those of resident traffic by constant demands. What is required is a system to develop this constant and not merely occasional travel by residents on a line into a class—a profit-earning class of traffic.

It will be no answer to say that such demands are not found to exist on this or that line; and they will not be found unless solicited, and are not exceptional in their character from those of any other desirable class of traffic. The non-existence of provisions required for the individual wants of the public is quite sufficient to render them absolutely dormant. The existence of a properly constituted system will very soon draw them out. Experiment will prove this.

It has been shown why, on social grounds it is desirable to develop local traffic. It is also on commercial grounds a sound policy to do so; that is, it is in accordance with sound commercial principles to fix the price of commodities with a view to obtain the largest possible market and the largest possible profit, putting the price at that figure which will command the largest possible custom compatible with a maximum of profit. Unless a mileage system, if such is in vogue, is such as to call forth all the possible traffic which can be obtained by the inducements it represents and can apply without risk of undue discrimination to each and all of the demands which a completely comprehensive system will elicit, then a very large proportion of those who would seek to avail themselves of its provisions will withdraw from any attempts in that direction.

The shipper, produce merchant, commission merchant, general dealer, etc., will tawdle the want of traveling facilities, and, as a rule, the passenger department will be sacrificed to the freight by the issue of a free pass; or, if not, and a pass is issued (on other grounds of general interest), the road will be running on a bad policy, and a weak one in every way, so far as that is concerned.

Teachers and scholars, preachers and numbers of residents along a line will have no chance of developing their usefulness and increasing their earnings with their sphere of action, unless facilities are at their disposal.

The traffic point must in each case be found, at which it will pay both parties to contract for travel, that is, that point at which the social points and capabilities of the community can be best led to become profitable for traffic. The thousand or more mileage ticket, good for a fixed period or good till used, with its usual unsystematic and unconditional terms, is like all loose commercial transactions, bad for all concerned. It is too limited in its application, and not protective enough. Also the suburban commutation or season tickets for city people are, as far as they go, but partial in their application. What is wanted is a complete system, proportionate throughout, and equitably compiled with reference to the social capacities of the people, and elastic enough to comprehend them all.

This leads us to the second part of our subject, namely, the "PRINCIPLES UPON WHICH A COMPLETE TARIFF OF COMMUTATION CHARGES MAY BE COMPILED FOR CONSTANT OR OCCASIONAL LOCAL PASSENGERS, WITH RULES, CONDITIONS AND ILLUSTRATIONS."

The object to be gained by a proportionate scale of prices for small or large amounts of travel within given periods has been clearly stated in the foregoing remarks upon the social aspect of the development of local passenger traffic by means of a thoroughly comprehensive commutation system. The principles for the compilation of such a scale must next be as clearly delineated as possible, so as to be within the grasp of those who are new to the subject as well as of adepts connected with traffic operations upon the more populous sections of the various lines.

The constant and the occasional traveler must both be provided for. Consequently there is a proportion to be maintained which is a joint one, varying on a joint variation or basis. It varies jointly with the mileage and the time within which the mileage is traveled. A large number of cases requiring satisfactory solution will consist of those who travel between two given points a given number of times each way, or so many miles within periods ranging from say one up to twelve months. In one case it may be for twice a week in 13 weeks or three months; in another, twice or thrice a week in 26 weeks or six months, and so on—both the mileage and the time varying jointly. Again, a considerable number of cases will come up where persons will require to use a section of the line, so as to visit certain points on that section periodically, and to travel east and west of a certain point where they reside perhaps so many miles in a given period east and so many west.

What is required is a clear, simple table, which will be easily referred to, avoid any discrimination of an unjust nature, and be strictly proportionate in all its parts.

To form such a table certain fixed points must be marked off, and they are as follows:

1. The least number of miles or the smallest number of rides to qualify for a commutation or mileage ticket.
2. The shortest period to be allowed for the performance of the minimum number of miles which can be granted.
3. The maximum charge per mile to be made to correspond with the minimum mileage allowed.
4. The minimum charge per mile to be made to correspond with the maximum mileage allowed.

When these fixed points are marked off, then a method of graduating intermediates must be defined, and it must be capable of proof as a just and equitable one, because in true proportion.

*Fixed Point No. 1.*—What are the social considerations which affect this point?

We must draw the line somewhere between the constant and occasional customer. Where shall we draw it? Looking at the question from general daily observations, the majority of the community who really require to use the line of a road in a systematic, constant manner will, as a rule, do so at least weekly. The average facility of doing so by most people is just about what they would require if a weekly use of the line was at their disposal.



To go and return once a week would probably be a very fair and desirable minimum to allow as a qualification for commuted fares.

Two single-journey rides a week or their equivalent in miles will answer the demands then of Point No. 1. **Fixed Point No. 2.**—How many weeks will be allowed on a minimum purchase, or what is the shortest period to be allowed at the rate of two rides a week?

Less than for one month would hardly answer. That is, no commutation to be granted for less than a one month's ticket representing in trips or miles two single journeys per week. This, however, may be left open to decision according to any particular set of circumstances.

**Fixed Point No. 3.**—The charge per mile to be made for this one month's ticket, or the maximum rate per mile to be used for compilation of a tariff. What other mileage charges are there which control this charge? It is clear there will be no commercial advantage if the purchaser of a one month's ticket for a given mileage or number of trips has to pay more than the ordinary rate per mile. Now, this will either be the single fare—that is, the ordinary local rate per mile—or, where return tickets are issued, it will depend upon the latter. In no case can it be higher than either. It must, as a rule, take up its rank in the third place on a company's tariff, with the single-fare mileage rate first, the return fare mileage rate second, and its own mileage charged third.

**Fourth Fixed Point.**—Having located in rank the maximum rate for a scale of proportionate charges, what shall we put the minimum rate at? This depends, of course, upon the profit point at which traffic can be said to become stationary—that is, neither a loss nor a gain.

It, of course, varies in almost every line, being subject to the general character of all the traffic carried. At the same time, it need not necessarily terrify us to a very great extent if we go rather low down where very constant travel is concerned, if, as is usual, no extra train service is required, and we cannot incur any direct outlay as a debit against it. A very fair way, however, of settling the question and giving it its due social importance is to base it relatively to the mileage rates given on the season-ticket travel. We shall require a figure per mile for a season-ticket holder who travels daily to and from business from January to December, and if we allow that such a person makes an average, allowing for holidays, etc., of ten rides a week, then this might be put as the minimum figure in our table against the various distances required.

**Gratuities Intermediates.**—Between one month's travel and twelve months, there will be a proportionate scale required. We shall have our maximum rate and our minimum rate, and some recognized and reliable method of graduating the scale must be adopted. An arithmetical progression meets this, and if the simple algebraic formula for that is adjusted, by substituting the necessary figures, the whole table will be worked out thoroughly and proportionately. This operation is illustrated in the table following. As it will be necessary to give a table to illustrate these remarks, one has been prepared for the purpose, as a sample from which more suitable ones may be compiled.

It will not by any means be a perfect one, but it can be used to advantage to illustrate from. The table will be found further on.

#### REMARKS ON THE TABLE OR SCALE OF MILEAGE RATES.

The scale in the table used to exemplify the principles of compilation ranges from  $2\frac{1}{2}$  cents a mile down to about a cent, as will be seen. The  $2\frac{1}{2}$ -cent rate will operate under fixed point No. 3, as the following remarks will explain: It has been, for example's sake, assumed that the ordinary single fare averaged three cents per mile, and that the ordinary return fare was made up of one-sixth off the two single fares, which would be three cents a mile less  $\frac{1}{2}$ , which would be equal to  $2\frac{1}{2}$  cents a mile, which is the maximum figure selected and given in the table. The cent-a-mile rate, or the minimum figure in the scale given in the table, is the rate per mile taken from a season-ticket tariff which has been adopted in illustration, and the intermediate figures are fixed as nearly in accordance and as near a regular proportion as the equivalent mileage rates given in said season-ticket tariff would admit of. These data are, of course, assumed for the purpose of illustration, and will in no way affect the utility of the table for general application where the data are different.

There is one precaution to be observed in compiling a tariff of the kind. Similar contracts for travel may be called for requiring equivalent charges which will require the scale to be in proportion throughout.

Thus a person desirous of a quotation for two trips a week between two given points four miles apart, and one desirous of a quotation for four trips a week between two given points two miles apart, and for three months in either case. These are equivalent applications, and it would be out of proportion and discriminative to quote different rates in each case, so that the table must be proved throughout, to see that multiples check off correctly. The scale is worked up to meet any application for a distance of 50 miles a week, for four up to fifty-two weeks, which is more than will probably be required, and ample for illustration.

**Extending Time on Unused Miles.**—There are instances where, through sickness or some unforeseen cause, a ticket has only been partly used. It would be a piece of extraordinary illiberality if no provision could be made to provide for this on business grounds. Condition No. 8 meets the case. To make the extension rule thoroughly applicable, however, it will be advisable to keep an officially indexed register, opening an account current with each purchaser, and thus be in a position, at any time, to grant an extension by charging the true difference with mathematical exactness. This is essential, too, especially at first, where new commuters are interested in trying the plan, and will do so, provided they can subsequently obtain its full advantages should they select to continue on.

Allowance must thus be made for difference between first rate and long-time rate, if required subsequently. Nothing will be lost by a prudent liberality in this respect.

#### INSTRUCTION TO CONDUCTORS AND FORM OF TICKETS.

Conductors' instructions must be protective. The best plan is by reproduction of signature, making printed instruction as follows:

"Tickets issued on (give character and color of tickets) are not transferable under any circumstances, and are to be accepted only for the passage of the person to whom issued. The identity of such person can be established by calling upon the holder thereof to write his name (which the purchaser agrees to do in the conditions indorsed on tickets) and comparing such signature with that subscribed thereon."

The reproduction of signature rule should call for absolute forfeiture if contravened. It is a most efficacious rule, and, even if not always entirely practicable, it is sound in principle. For we must bear in mind that it is not so much the absolute certainty of detection that is required to prevent fraud as the increasing the chance of detection to a point as nearly certain as possible. The more nearly we can make it so the nearer the object that we are in search of is gained.

#### CONDITIONS.

A few useful conditions to be embodied in agreement to be signed on application may be advisable.

1. That no commutation be made where the number of trips applied for is less than would represent two single-journey rides per week between two given stations, or an equivalent mileage—not less than that represented by a double trip per week.

2. **Commutation tickets for individual applicants** will be issued for two or more single-journey rides per week between two given stations, or as stated in condition No. 1, for periods ranging from one up to twelve months, at prices varying in proportion to the frequency with which their holders may require to travel between the two given points—or even an equivalent mileage.

3. **For Partners in a Firm and their Employés.**—Two or more bona fide partners in a firm may obtain terms similar to those to an individual purchaser, as in conditions Nos. 1 and 2.

4. **Family Commutation Tickets.**—Members of one and the same family residing together can obtain a commutation in price, provided the number of trips purchased represents not less than that allowed to individual purchasers for each member of the family, the rate per mile in the case of a family being estimated on the total number of miles or rides, and being consequently less in proportion than if each member purchased individually. Applications for family tickets must specify in each case the name of each member and number of rides in miles.

5. **Husband and Wife on the Same Ticket.**—The price for a commutation ticket to entitle both husband and wife to use the same ticket to be one-half more than for an individual purchaser, as per condition No. 2.

6. **Pupils and Scholars,** certified to as under 18 years of age and under tuition, to be allowed one half of the adult prices.

7. **Ladies and Domestic Ticket.**—Annual ticket-holders to be allowed to purchase 30 trip-tickets, or equivalent mileage, for three months, at commutation prices.

8. **Extension of Time** requested on the unused portion of a ticket to be charged for at the difference between the rate per mile originally paid and what would have been required if the ticket had been wanted for a longer period. This privilege, however, will only apply where parties have been prevented by unavoidable and unforeseen causes from fulfilling the original contract.

9. **Commutation tickets** are issued subject to the right of the company to change the time of arrival or departure of any train at or for any station or stations, and to diminish the number of trains or cars at pleasure; also to cancel the contract for passage made with their holders at any time, if desired, refunding proportionate value of unused mileage.

#### REGULATIONS.

1. These tickets are good only for continuous passage in either direction, unless otherwise provided.

2. They confer no stop-over privileges unless otherwise provided.

3. They are good by all ordinary trains stopping at the stations named upon them.

4. They are in no case valid for passage for other than their actual and bona fide holders.

5. If presented by other than their actual holders, they will be taken up by conductor and forfeited.

6. They are subject to the rules and regulations of the company for the conveyance of passengers.

7. They confer no privilege for the transportation of goods, packages, or other matter beyond usual allowance of baggage.

8. They must be presented on each occasion when called for by conductors, or payment of regular fare will be demanded. Refusal to reproduce signature as proof of identity will involve forfeiture.

9. They must be given up on date of expiration.

10. Expired tickets must be returned when an application for renewal or extension is demanded.

11. They are only valid for passage within the time specified upon the face of them.

12. No return of any portion of the sum received for these tickets will be made in consequence of the inability of their holders to use them within the date for which they have been issued, except as per condition No. 9 above, or where the contract has been canceled by the company, owing to discontinuance of train service or some unforeseen cause.

13. These tickets, if lost, do not entitle those to whom they have been issued to obtain duplicates.

14. No refund of fare will be allowed to holders failing to produce them for passage when called upon by conductors or ticket clerks to do so.

(TO BE CONTINUED.)

#### Transportation in Congress.

In the Senate on the 19th:

The bill to incorporate the United States Railway Mail Service Mutual Benefit Association was passed.

The Post-Office appropriation bill being taken up, the following amendments were agreed to: Increasing the appropriation for railroad transportation from \$9,000,000 to \$9,400,000, of which sum \$400,000 may be expended to maintain and secure from railroads necessary and special facilities for the postal service, and \$16,988 for balance due for salaries and expenses of the late commission on railway mail service; increasing appropriation for route agents, clerks, etc., from \$1,350,000 to \$2,770,000; providing that postal clerks, route agents, local agents and messengers shall be called postal clerks and divided into five classes, with salaries from \$200 to \$1,400 yearly; striking out of the House bill the clause providing that the Postmaster-General shall make no deficiency in the appropriation for the current fiscal year by placing postal cars on any line.

#### Who is a Passenger?

This question has often been propounded in railway business. Lawyers have shown ingenuity and astuteness in raising it in many cases where it seems to have no business. Often it has an important bearing; for there are rules that a passenger hurt by a collision can recover damages, but an employé or a trespasser on the train cannot; that a company is bound to protect its passengers against violence and injury from other passengers, but not against misconduct of rowdies who force their way on a train; that a passenger is entitled to so much baggage, and the like. All such rules make it often a nice question.—Who is a passenger?

A dead-head or a stow-away is not a passenger, and if he is hurt in a collision or train-wreck, he gets no damages. But it is not every one riding without paying fare who comes under this rule. The question is not whether the person paid fare, but whether the company had come under an obligation to carry him safely. Take a case of some one who is riding on a pass given him because he was going on the company's business. The stockholders of a company once sent one of their number to make an examination of the road, and the President took him into a special car free of charge, and they ran up the road to see how it looked, and a down-train ran into the special car and smashed the investigating stockholder. He sued for damages, which the company disputed, because he was not paying fare. In another case an inventor of a patent car-coupling was negotiating at Portland with officers of a railroad to adopt it, and they asked him to go up to Montreal and see the Superintendent about it, and gave him a pass. On the way he was hurt by the car running off the track, and the company refused damages because he was riding free. In both these cases the United States Supreme Court held he was a passenger. The company had undertaken for considerations satisfactory to them to carry him, and was bound to carry him safely.

The pop-corn boy's case is like these. He was a Massachusetts boy, who rode back and forth on the Vermont & Massachusetts Railroad to Hoosac Tunnel, on an agreement that he should have the privilege of selling pop-corn on the trains, and should pay \$30 a quarter and carry round ice-water for the passengers. Of course, he did not buy tickets. The train went through a bridge, and the pop-corn boy was drowned. The court held that he had all the rights of a passenger to be carried safely, although he did not pay fare. The same sort of a decision was made in California in favor of a bar-keeper on a steamboat. He traveled back and forth without buying tickets, but paid \$200 a month for the privilege of keeping bar and use of the bar-room. The court held this made him a passenger.

A baby may be a passenger. The Great Western Railway in England has the rule that children under 3 years of age go free; children between 3 and 12 must pay half fare. Mrs. Austin, carrying her little child, took a trip, in which the train was wrecked and the child's leg was broken, and a suit was brought in his behalf. It then appeared that the mother bought a ticket for herself, but did not purchase any for the child. Yet the child was two months more than three years old, and ought, by the rule, to have paid half fare. But the ticket-seller and conductor did not ask for any fare, nor inquire how old the child was, and the mother did not make any false statement. The company thought these facts were a good defense; they ought not to be deemed to take any risk as to the child unless his fare was paid. But the Court said: Not so. The company undertook to carry the child and were bound to carry it safely. If they wanted fare, they should have asked for it, or they might sue the mother for the fare. The child was not to blame.

Quite a number of the cases of this sort have arisen upon what are known as "drovers' passes." Out West, where droves of cattle, hogs, sheep or other live stock are sent to market over long railroad routes, it is common for the owner to go or send some one on the train to watch the animals, and water and feed them on the way. This attendant pays no distinct fare. Freight is paid on the animals, and that covers the charge for carrying the man. Very generally these passes contain a stipulation that the traveler assumes all risk of accident, and if he is hurt even by negligence of the persons in charge of the train, he will not demand damages. But the courts have held these drovers' pass persons are passengers. The freight on the live stock is their fare, and the company is bound to use due care. And as to their stipulation, that may protect the company from damages for a mere accident, but not for negligence. The law will not allow companies to agree beforehand that they may be negligent. That would be too much like the Pope's indulgences in Luther's time.

But all these cases are founded upon the idea that the company had somehow or other undertaken to carry the person who was hurt. In cases where he got upon the train by mere mistake, or oversight of the conductor or engineer, he has been held to ride at his own risk, although perhaps he was allowed to ride. How about travelers who are coming to a train or are walking away from it after their ride? In one case the company ran a stage from the heart of the town to the station to bring passengers. This ride was free. Mr. Buffet wished to travel by the cars, and he took a seat in this stage to be carried to the depot. He expected to buy a ticket when he got there, but on the way, by the negligence of the driver, the coach came to grief and he was injured. The company thought their risk did not begin till he had bought his ticket; but the court thought he could recover for the failure to carry him safely by the coach. And the passenger's right to be carried safely continues until he has had fair time and chance to leave the station and grounds of the road at the other end of his journey. If another train carelessly runs over him before he has had time to get across the tracks from his car, or if there are holes and pitfalls in the platforms, in which he trips and is hurt, the company cannot refuse to pay damages on the idea that he ceased to be a passenger when he stepped out of the car.

There have been some cases about rowdies and trespassers upon trains. In general a railroad is bound to carry all persons impartially. But there are exceptions. It has been held that a person who is so drunk as to be annoying and dis-



gusting to other passengers has not the right of a passenger to ride—the conductor may refuse to take him, although he has a ticket. But if the company consents to take him, they are bound to carry him as carefully as they must a sober man. In Nebraska a man sued a company for refusing to take him as a passenger after he had bought a ticket, and the company proved in defense that he was a notorious gambler, and that he was riding back and forth in search of persons whom he could fleece at cards. The judge said this was a good defense. A company is not bound to carry one whose ostensible business is to injure the line, one fleeing from justice, one going upon the train to commit assault or theft, or for purposes of gambling, or a person afflicted with a contagious disease by which other passengers would be endangered.—*New York Times*.

## General Railroad News.

### MEETINGS AND ANNOUNCEMENTS.

#### Meetings.

Meetings will be held as follows:  
*Northern Central*, annual meeting, at the office in Baltimore, Feb. 27, at 1 p. m.  
*Cleveland, Columbus, Cincinnati & Indianapolis*, annual meeting, at the office in Cleveland, O., March 5.  
*Pennsylvania*, annual meeting, at Musical Fund Hall, Philadelphia, March 11 at 10 a. m.

#### Dividends.

Dividends have been declared as follows:  
*Chicago, Burlington & Quincy*, 4 per cent., semi-annual, payable March 15.  
*Chicago & Alton*, 3½ per cent. on the preferred and 3 per cent. on the common stock, both semi-annual and payable March 4. The common-stock dividend is reduced from 3½ to 3 per cent.  
*Chicago & Northwestern*, 1½ per cent., quarterly, on the preferred stock, payable March 24. The company changes its dividend periods from semi-annual to quarterly.

#### Mail Service Extensions.

Mail service has been ordered over railroad lines as follows:  
*Central Branch, Union Pacific*, service ordered for the branch from Concordia, Kan., to Scandia, 19.96 miles.  
*Natchez, Jackson & Columbus*, service extended from Red Lick, Miss., to Martin, 8.77 miles.  
*Morgan's Louisiana & Texas*, service ordered on branch from Terre Bonne, La., to Thibodeaux, 5.75 miles.  
*Pasadena & Delaware*, service ordered from Summit, N. J., to Bernardsville, 14.78 miles.  
*Des Moines, Adel & Western*, service ordered from Waukegan, Ill., to Adel, 7.34 miles.

#### Foreclosure Sales.

The *Eastern Shore road* was sold in Princess Anne, Md., Feb. 19, under decrees of foreclosure of mortgage. The present sale was apparently under foreclosure of the second mortgage, as the dispatch states that the road was bought for account of the bondholders for \$5 in addition to the prior lien of \$400,000. The road is 38 miles long, from Delmar, Md., to Crisfield; its debt consisted of \$400,000 first and \$187,250 second-mortgage bonds.

The sale of the *Painesville & Youngstown road* is postponed to April 11, instead of April 6, as heretofore stated.

*Central and Western Associations, General Passenger & Ticket Agents.*

These two associations held a joint meeting in Cincinnati, Feb. 12. The chief business was the adoption of a resolution to prevent the cutting of rates, by providing that at all competing points the terminal lines shall redeem at full tariff rates any tickets of their own issue. A committee was also appointed to devise a plan for the uniform government of coupon-ticket and baggage business, to report at a meeting of the general association in New York.

#### Chicago Meeting on Passes.

A meeting was held in Chicago, Feb. 12, at which the following roads were represented: *Chicago & Northwestern*; *Chicago, Milwaukee & St. Paul*; *Missouri Pacific*; *St. Louis, Kansas City & Northern*; *Hannibal & St. Joseph*; *Chicago & Alton*; *Wisconsin Central*; *Southern Minnesota*; *Chicago, Rock Island & Pacific*; *Pekin, Lincoln & Decatur*; *Kansas City, St. Joseph & Council Bluffs*; *Indianapolis, Bloomington & Western*; *Baltimore & Ohio*; *Michigan Central*; *Missouri, Kansas & Texas*; *Chicago, Burlington & Quincy*; *Wabash*; *Chicago, St. Paul & Minneapolis*; *Illinois Central*; *Toledo, Peoria & Warsaw*; *Terre Haute & Indianapolis*; *St. Louis, Keokuk & Northwestern*; *Chicago & Iowa*; *Pittsburgh, Ft. Wayne & Chicago*; *Central of Iowa*; *Lafayette, Muncie & Bloomington*.

Mr. C. W. Smith, of the *Chicago, Burlington & Quincy*, presided, and Mr. J. W. Midgley acted as Secretary.

After a few remarks as to the object of the meeting, it was resolved to form a permanent organization, and a committee was appointed to arrange the details.

At the afternoon session the committee recommended that a permanent organization, to be known as the Transportation Association, be formed; that the members agree to issue no passes on freight traffic except for men in charge of stock, one man with three cars or less, two men with five cars, three men with ten, and one additional for every ten cars; also one man with each car of potatoes, etc., where a stove is furnished by the shipper, and one man with each car of emigrant movables; return passes to be given in these cases. It was also agreed that members could issue thousand-mile tickets, good for six months, at a minimum rate of two cents per mile, rates to be agreed on by separate roads.

An executive committee was chosen, and the election of a president and secretary was left to them. The proceedings were ordered printed, copies to be sent to all roads interested.

### ELECTIONS AND APPOINTMENTS.

*Alabama Great Southern*.—Mr. Reau Campbell has been appointed General Traveling Agent. His address is Chattanooga, Tenn. He has been for some years General Passenger Agent of the Montgomery & Eufaula.

*Boston, Barre & Gardner*.—At the annual meeting in Worcester, Mass., recently, the following directors were chosen: George S. Barton, Charles Heywood, Levi Heywood, S. R. Heywood, Calvin Foster, M. V. B. Jefferson, W. W. Rice, Isaac N. Ross, Stephen Salisbury, Jr., Nelson D. White. The board elected George S. Barton, President; W. E. Starr, Clerk and Treasurer.

*Champaign, Havana & Western*.—This company has been organized by the buyers of the Indianapolis, Bloomington & Western, Western Extension, at foreclosure sale, and the following officers chosen: President, Sumner R. Stone, New York; Vice-President, W. H. Smith, Urbana,

Ill.; Secretary, W. C. Johns, Decatur, Ill.; Treasurer, S. H. Busey, Urbana, Ill.

*Chicago, Burlington & Quincy*.—The positions of General and Assistant Roadmaster have been abolished, and each division is now in charge of its division roadmaster. Mr. J. B. Maxon, of Aurora, Ill., is Roadmaster of the Chicago Division, which includes the main line from Chicago to Mendota, and the Geneva, Junction, Rock Falls, Rock River, and Prophetstown branches.

*Chicago & Illinois River*.—Mr. Edward C. Aken has been appointed Receiver, in place of Thomas C. Hill.

*Columbus, Soto & Hocking Valley*.—At the annual meeting in Columbus, Feb. 13, the following directors were chosen: M. A. Daugherty, E. T. Mithoff, William Monypeny, Columbus, O.; Harford Toland, London, O.; William Donne, Circleville, O.; Frederic F. Ruple, Logan, O.; Peter Hayden, New York. The board elected Edward T. Mithoff, President; William Monypeny, Vice-President; Harford Toland, Treasurer; C. R. Abbott, Secretary; C. O. Hunter, Attorney.

*Fort Wayne, Jackson & Saginaw*.—At the annual meeting in Jackson, Mich., Feb. 11, the following directors were chosen: P. B. Loomis, D. Merriman, E. A. Webster, W. D. Thompson, W. R. Reynolds, H. H. Smith, E. O. Grosvenor, A. P. Edgerton, Henry Manning, John H. Bass, O. P. Morgan, I. A. Woodhull, C. A. O. McCullan. The board re-elected the old officers as follows: President and General Manager, P. B. Loomis; Vice-President, E. O. Grosvenor; Treasurer, H. D. Potter; Secretary and Counselor, E. Pringle; Executive Committee, P. B. Loomis, E. O. Grosvenor, E. A. Webster.

*Indianapolis & St. Louis*.—At the annual meeting in Indianapolis, Feb. 19, the following directors were chosen: H. B. Hurlburt, J. H. Devereux, S. Burke, Cleveland, O.; Thos. D. Messler, J. N. McCullough, Pittsburgh; Thomas A. Scott, Philadelphia. The board re-elected H. B. Hurlburt, President; E. B. McClure, General Superintendent.

*Jacksonville, Pensacola & Mobile*.—The following changes are announced by S. Conant and A. B. Hawkins, Receivers: Capt. Charles Holmes, General Superintendent, having resigned, the Receivers assume the general management of the railroad; John P. Laird is appointed Superintendent; Edgar Vliet is appointed General Freight and Ticket Agent; Wm. O. Ames is appointed Chief Clerk in the office of the Receivers. All correspondence properly belonging heretofore to the office of the General Superintendent will be addressed to the Receivers at Tallahassee, Florida.

*Little Falls & Dakota*.—The first board of directors is as follows: J. Simons, N. Richardson, Little Falls, Minn.; A. Barto, E. P. Barnum, Sauk Centre, Minn.; J. L. Whittemore, W. S. Kinney, Glenwood, Minn.; H. W. Stone, O. B. Stedman, Morris, Minn.

*Little River Valley & Arkansas*.—The officers now are as follows: A. M. Shead, President; George B. Clark, Secretary; O. Kochlitzki, Chief Engineer and General Superintendent. Offices at New Madrid, Mo.

*Lowell & Andover*.—At the annual meeting in Lowell, Mass., Feb. 12, the following directors were chosen: Horace J. Adams, Frederick Ayer, Frederick F. Ayer, Arthur P. Bonney, Gustavus Q. Fox, Josiah Gates, Jacob Nichols, George Ripley, E. M. Sargent. The board elected Frederick Ayer, President; Benjamin Walker, Clerk and Treasurer. The road is leased to the Boston & Maine.

*Memphis & Little Rock*.—Mr. Ed. F. Sisson has been appointed General Southeastern Agent for this company, with headquarters at Chattanooga, Tenn., vice B. F. Neville, resigned. Appointment taking effect Feb. 10.

*Milford & Woonsocket*.—At the annual meeting in Milford, Mass., Feb. 10, the following were chosen: President, George Draper; Treasurer, Charles F. Claffin; Clerk, James R. Davis; Directors, George Draper, A. C. Mayhew, Charles F. Claffin, Samuel Walker, Elbridge Mann. The road is leased to the Providence & Worcester.

*New York, New Haven & Hartford*.—The board has elected Mr. George H. Watrous President, in place of Wm. D. Bishop, resigned. Mr. Watrous has been for a number of years counsel of the company, and a director for three years past.

*Painesville & Youngstown*.—Mr. J. A. Newcome has been appointed Acting Superintendent, in place of Lon. F. McAleer, who has gone to the Utica, Ithaca & Elmira Road.

*Pittsfield & North Adams*.—At the annual meeting in Boston, Feb. 12, the following directors were chosen: Frank Appleton, Chester W. Chapin, Henry Colt, Edward Jackson, Ignatius Sargent, Jr. The road is leased to the Boston & Albany.

*Scioto Valley*.—At the annual meeting in Columbus, Feb. 13, the following directors were chosen: George D. Chapman, E. T. Mithoff, William Monypeny, Columbus, O.; Harford Toland, London, O.; John Groce, Circleville, O.; M. Boggs, Chillicothe, O.; George Davis, John G. Peebles, Portsmouth, O.; Edward D. Adams, New York. Mr. Adams is a new director and is a member of the firm of Winslow, Lanier & Co. The board elected E. T. Mithoff, President; George D. Chapman, Vice-President and General Manager; Harford Toland, Treasurer; James P. Curry, Secretary; John B. Peters, Superintendent.

*Southwestern, of Georgia*.—At the annual meeting in Macon, Ga., last week, the following directors were chosen: Dr. John S. Baxter, T. B. Gresham, William S. Holt, J. E. Jones, A. R. Lawton, John L. Mustain, Virgil Powers, Wm. M. Wadley. The board re-elected Gen. William S. Holt, President. The road is leased to the Central, of Georgia.

*Transportation Association*.—This association was formed at a meeting held in Chicago, Feb. 12, and the following Executive Committee chosen: Marvin Hughitt, Chicago & Northwestern; J. B. Carson, Hannibal & St. Joseph; E. B. Thomas, Cleveland, Columbus, Cincinnati & Indianapolis; D. W. Caldwell, Pittsburgh, Cincinnati & St. Louis; John Newell, Lake Shore & Michigan Southern; J. C. McMullin, Chicago & Alton; W. W. Peabody, Ohio & Mississippi.

*Utica, Chenango & Cortland*.—At the annual meeting in Cortland, N. Y., Feb. 12, the following directors were chosen: P. H. McGraw, O. A. Kinney, J. S. Squires, F. E. Knight, Chauncey Keator, J. W. Merchant, George L. Cole, Ralph Taylor, Horatio Ballard, J. T. Butman, I. W. Phelps, J. C. Carmichael, George James Rice.

*Wabash*.—At the annual meeting in Toledo, Feb. 19, the following directors were chosen: A. L. Hopkins, Toledo, O.; James Cheney, Ft. Wayne, Ind.; Charles Ridgely, Springfield, Ill.; A. M. Billings, George L. Dunlap, Chicago; W. M. Bliss, J. B. Colgate, Cyrus W. Field, C. K. Garrison, W. R. Garrison, Solon Humphreys, D. A. Lindley, H. A. V. Post, New York. The new directors are J. B. Colgate, W. R. Garrison and D. A. Lindley, who succeed M. K. Jesup, E. H. R. Lyman and J. A. Roosevelt.

*West Jersey*.—At the annual meeting in Camden, N. J., last week, the following directors were chosen: Coleman F. Leaming, Cape May Court House, N. J.; Lewis Mulford, Millville, N. J.; John M. Moore, Clayton, N. J.; Charles E. Elmer, Thomas Jones Yorke, Salem, N. J.; Thomas H. Dudley, Thomas H. Whitney, Camden, N. J.; Josiah Bacon, J. N. DuBarry, Strickland Kneass, George B. Roberts, N. Parker Shortridge, George Wood, Philadelphia. The only new director is Mr. Whitney, who succeeds Hon. A. G. Cattell.

### PERSONAL.

—Mr. Asher M. Atkinson, Superintendent of the Delaware & Hudson Canal, died very suddenly at his residence in Honesdale, Pa., Feb. 13, aged 58 years.

—Col. D. C. Dodge has resigned his position as General Superintendent and General Freight and Ticket Agent of the Denver & Rio Grande road. He has held the last named office almost ever since the road was built, but was appointed General Superintendent only last October.

—Mr. M. Stanton, General Superintendent of the Selma, Rome & Dalton Railroad, is reported fatally injured by an accident on his road Feb. 18, the train, on which he was, breaking through a bridge near Selma, Ala.

—The reported retirement of Mr. George D. Champman from the Scioto Valley road is contradicted by his reflection as General Manager last week, as noted elsewhere.

—Mr. Daniel L. Harris, President of the Connecticut River Railroad Company, had a stroke of paralysis Feb. 17, and for a time was not expected to live, but is now improving a little. Mr. Harris has been in poor health for some months.

### TRAFFIC AND EARNINGS.

#### Railroad Earnings.

Earnings for various periods have been reported as follows:

Year ending Dec. 31:	1878.	1877.	Inc. or Dec.	P. c.
At. Miss. & Ohio.....	\$1,718,456	\$1,776,018	D. \$57,562	3.2
Net earnings.....	325,806	477,000	I. 48,200	10.1
Bur. Cedar Rapids & Northern.....	1,527,067	1,349,881	I. 277,786	22.2
Net earnings.....	450,024	413,284	I. 36,740	8.9
Bur. & Mo. River in Nebraska.....	1,900,518	1,308,502	I. 591,016	39.5
Net earnings.....	1,310,577	906,976	I. 403,601	44.5
Central Pacific.....	17,007,451	16,471,144	I. 1,134,307	6.9
Net earnings.....	8,771,090	8,096,726	I. 774,364	9.6
Chicago, Burlington & Quincy.....	14,113,503	12,479,286	I. 1,634,217	13.1
Net earnings.....	6,472,307	5,673,051	I. 799,256	14.1
Galveston, Har. & San Antonio.....	1,280,205	1,022,611	I. 257,594	25.2
Kansas Pacific.....	3,754,338	3,294,549	I. 459,789	14.0
Net earnings.....	1,534,230	1,384,774	I. 149,456	10.8
Memphis, Paducah & Northern.....	180,324	189,584	D. 9,260	1.7
Net earnings.....	38,324	63,971	D. 25,647	40.1
Nash. Chatla. & St. Louis.....	1,631,081	1,749,209	D. 117,528	6.7
Net earnings.....	576,975	702,587	D. 125,612	17.9
St. Louis, Iron Mt. & Southern.....	4,514,321	4,500,422	I. 13,899	0.3
Net earnings.....	1,945,956	2,131,902	D. 185,946	8.7
Scioto Valley.....	282,153	.....	.....	.....
Net earnings.....	125,878	.....	.....	.....
Southern Minnesota.....	943,081	980,065	D. 46,984	6.7
Net earnings.....	311,152	296,296	I. 14,856	5.0
West Jersey.....	541,087	505,025	D. 36,062	9.0
Net earnings.....	202,985	203,505	D. 610	0.3
Eleven months ending Nov. 30:				
Atchison, Topeka & Santa Fe.....	\$3,009,936	\$2,432,328	I. \$1,177,008	48.4
Net earnings.....	1,812,817	1,243,821	I. 568,996	45.7
Six months ending Dec. 31:				
Chesapeake & Ohio.....	\$1,007,023	.....	.....	.....
Net earnings.....	246,401	.....	.....	.....
Month of December:				
Galveston, Har. & San Antonio.....	\$131,906	\$110,548	I. \$21,448	19.4
Great Western.....	209,500	370,800	D. 161,300	28.5
Net earnings.....	63,000	104,300	D. 41,300	59.0
Month of January:				
Cairo & St. Louis.....	\$10,054	\$10,067	I. \$5,087	46.2
Cleve. Mt. Vernon & Del.....	28,989	29,150	D. 161	0.6
Galveston, Houston & Henderson.....	48,932	41,966	I. 6,966	16.0
Ind., Bloom. & Western.....	91,823	120,318	D. 28,495	23.7
Kansas Pacific.....	179,773	198,640	D. 18,867	9.5
Memphis, Paducah & Northern.....	16,355	16,546	D. 1,911	7.2
Mobile & Ohio.....	190,000	271,902	D. 81,902	30.1
Paducah & Elizabethtown.....	25,191	27,767	D. 2,576	9.3
St. Louis & B. E. St. Louis Div.....	45,000	49,235	D. 4,235	8.6
St. Louis & S. E. Ky. Div.....	26,042	23,402	I. 2,640	11.3
St. Louis & S. E. Tenn. Div.....	10,849	12,498	D. 1,649	13.2
First week in February:				
Atchison, Topeka & Santa Fe.....	\$70,500	\$40,243	I. \$30,257	90.2
Chl. & Eastern Illinois.....	16,048	14,999	I. 1,049	7.0
St. Louis, Iron Mt. & Southern.....	93,305	96,024	D. 2,719	3.1
Wabash.....	87,034	82,705	I. 4,329	5.2
Week ending Feb. 7:				
Great Western.....	\$80,104	\$95,904	D. \$15,800	7.1
Week ending Feb. 8:				
Grand Trunk.....	\$171,797	\$201,372	D. \$29,575	14.7

#### Coal Movement.

Coal tonnages for the week ending Feb. 8 are reported as follows:

	1879.	1878.	Increase.	P. c.
Anthracite.....	328,009	229,111	98,898	43.2
Semi-bituminous.....	51,994	31,797	20,197	63.4
Bituminous, Pennsylvania.....	39,758	30,711	9,047	8.3
Coke, Pennsylvania.....	20,819	.....	.....	.....

The coal tonnage of the Pennsylvania Railroad for January was:

	1879.	1878.	Inc. or Dec.	P. c.
Anthracite.....	43,909	63,003	D. 19,094	43.6
Semi-bituminous.....	106,309	98,291	I. 8,018	8.2
Bituminous.....	107,039	139,308	D. 32,269	23.2
Coke.....	103,572	83,858	I. 19,714	23.5

Total..... 380,829 305,453 I. 75,376 4.2  
 The actual tonnage passing over the Huntingdon & Broad Top road in January was:

	1879.	1878.	Inc. or Dec.	P. c.
Broad Top coal.....	11,003	12,752	D. 1,749	13.7
Cumberland.....	7,355	2,173	I. 5,182	238.8
Total.....	18,358	14,925	I. 3,433	23.0

The coal tonnage of the Hocking Valley in Ohio for 1878 was as follows: Shipped by rail, 1,086,245 tons; blast-furnace consumption, estimated, 160,000 tons; other local consumption, estimated, 50,000 tons; total, 1,296,245 tons.



Most of the rail shipments are over the Columbus & Hocking Valley road.

Negotiations are reported in progress for a renewal of the Anthracite Combination in some form, but it is uncertain yet whether they will amount to anything.

#### Cotton.

Receipts, at shipping ports, for the week ending Feb. 14 and for the crop year from Sept. 1 to that date, have been:

	1876.	1877.	1877.	1876.	1875.
Week.....	150,841	120,000	120,720	110,576	96,950
Crop year....	3,502,189	3,374,909	3,407,924	3,295,251	2,836,183

For the week this year 89 per cent. of the receipts were at New Orleans.

#### Grain Movement.

Receipts and shipments of grain of all kinds for the week ending Feb. 8 are reported as follows, in bushels, for the past six years:

	Northwestern		Atlantic	
Year.	Receipts.	Shipments.	Receipts.	Shipments.
1874.....	2,912,288	1,876,452	1,838,141	1,838,141
1875.....	1,345,508	936,011	1,533,001	1,533,001
1876.....	2,324,775	1,101,721	1,730,545	1,730,545
1877.....	1,477,302	970,548	1,975,509	1,975,509
1878.....	2,690,954	2,405,538	3,080,912	3,080,912
1879.....	2,863,091	1,681,013	3,926,153	3,926,153

The Northwestern receipts, though never but once equalled in the corresponding week of previous years, are still the smallest of the year. The shipments, on the other hand, are the largest of the year, and larger than in any other week since navigation closed, though smaller than in any week last winter after Jan. 11. The Atlantic receipts are much larger than in any other week since navigation closed, and were never exceeded but once before in a winter week.

Of the Atlantic receipts 48.2 per cent. were at New York, 13.7 at Philadelphia, 12.8 at Baltimore, 12.1 at New Orleans, 11.1 at Boston, 2 at Portland, and 0.1 per cent. at Montreal.

The Toronto Monetary Times reports the receipts of grain at Montreal for 1878 somewhat differently from the New York Produce Exchange, whose figures we gave in discussing the receipts at Atlantic ports in our issue of Jan. 10 last. Its and the Exchange figures are:

	1878.	1877.	Inc. or Dec.	P. c.
Monetary Times.....	14,678,892	13,427,468	1,251,424	8.5
Produce Exchange....	12,858,000	13,427,468	D. 569,468	4.4

The Monetary Times gives the first statement that we have ever seen of the proportions of grain received by each route, which for 1878 were: 74.1 per cent. of the wheat, 98.3 of the corn, 65.7 of the peas (an important item at Montreal), 60.2 per cent. of the barley, and 14 per cent. of the flour by the Lachine Canal (St. Lawrence), and the rest by the Grand Trunk Railway.

The flour receipts were 916,379 barrels in 1878, against 823,873 in 1877. The rail receipts were equivalent to about 788,000 barrels of flour and 2,400,000 bushels of grain of all kinds. The latter, we may assume, was chiefly of Canadian origin, as there is a good deal of wheat and barley raised on the lines of the road. This of course is not a measure of the Grand Trunk's grain business, for it is the chief carrier to Portland, and also carries to Boston and to most interior New England towns.

San Francisco receipts for the week ending Feb. 8 were 21,766 barrels flour, 255,003 bushels wheat, 21,395 bushels barley, and 13,027 bushels other grain; total, reducing flour to wheat, 398,255 bushels.

#### Pacific Through Freights.

Shipments of through freight eastward over the Central Pacific for January were: San Francisco, 3,004 tons; interior points, 874 tons; total, 3,878 tons. Leading articles of freight were 1,066 tons barley, 393 tons wool, 370 tons tea, 239 tons coffee and 117 tons silk.

#### Provision Exports.

Mr. Joseph Nimmo, Chief of the Bureau of Statistics, reports that the exports of hog products, fresh and salt beef, tallow, butter and cheese from the United States in January last amounted to 76,500 tons, of which 56,489 tons, or 73.8 per cent., were from New York, 7,566 tons, or 9.9 per cent., from Philadelphia, 7,180 tons, or 9.4 per cent., from Boston, and 4,503 tons, or 5.8 per cent., from Baltimore. The balance of 1.1 per cent. were exported from Portland, Huron (Sarnia), Detroit, New Haven and Buffalo. Hog products make up by far the larger part of the total—62,757 tons out of the 76,500—but though the other articles made up but 18 per cent. of the weight it had 22½ per cent. of the value. The shipments of fresh beef were twice as great as those of salt beef, but still were but 2,548 tons—not so much as the cheese exports, which were 23,279 tons. The amount of shipments must have been very much larger this year than last, but the value reported is but \$10,508,353, against \$13,088,033 in January of last year.

#### Ocean Rates.

A contract was reported Saturday last for corn from New Orleans to Liverpool by steamer at 7d. per bushel, which is notable, as New Orleans rates are seldom reported. The same day contracts from Baltimore were reported for grain at 6½d. to 7d. Cotton there was taken by sail at ½d. to ¾d. per pound for New York and ¾d. to 1½d. for New Orleans.

Quotations Tuesday were for New York to Liverpool by steam, 5½d. to 6d. per bushel for grain, 3s. per barrel for flour, 35s. per ton for bacon and 45s. for butter and cheese, 20s. to 25s. per ton for measurement goods, ½d. per pound for cotton, 3s. per barrel for apples, and 4s. per barrel for oysters. By sail, cheese was taken at 27s. 6d. per ton, and general cargo at 23s. 6d. for heavy and 15s. for measurement goods.

Charters of two schooners from Hoboken (New York harbor) to Galveston with railroad iron are reported at \$4 per ton.

#### Chicago Shipments Eastward.

More than ordinary attention has been paid to these this winter, because of the decision to pool and to date the apportionment back to the time the decision was made, though no pool has as yet been made, and probably none will be made now to cover this winter's traffic. As there was a great deal of contention as to the proportions that the different roads could secure, and any future pool is likely to be affected by the course of shipments, immediately before it shall be established, we may assume that every line has done its best this winter to secure shipments. But the natural course of things has been interrupted by circumstances. The snow blockade in the vicinity of Buffalo very greatly disturbed the traffic of the New York Central and the Erie for some time, indeed they have hardly recovered from its effects yet; for though the tracks were cleared long ago, the cars that were laid up there have not all got through to the East and back so as to be ready for loads yet, and the northern lines have not always been able to take all the traffic that offered. For the week ending Feb. 15, it is reported that 31 per cent. went forward by the Michigan

Central, 22 by the Lake Shore, 33 by the Fort Wayne, 14 by the Pan Handle, and 3 per cent. by the Baltimore & Ohio. Usually, the Michigan Central has the most, and in the pool of last March it was awarded more than both of the Pennsylvania's lines. Just now it is said that the Vanderbilt roads are maintaining the full rates of Nov. 25—35 cents for grain and 40 for fourth-class and most provisions, while the Pennsylvania accepts 10 cents less. Consequently, it is supposed that the Pennsylvania gets about all the new business, while the Vanderbilt roads have about all they can do carrying on the contracts made early in the winter, probably at just about the rates which the Pennsylvania is accepting now.

#### Colorado Passenger Rates.

At a meeting held in Chicago, Feb. 12, it was agreed that the roads leading west from Chicago should restore the full rates on the last agreed tariff sheets of Feb. 1, the agreement to take effect Feb. 13; also that each party to the agreement should redeem tickets of its own issue sold after that date, when presented, at the full tariff rates. This agreement had special reference to passenger rates to Colorado points.

#### The Indianapolis Pool.

Mr. S. F. Pierson, Commissioner, reports the tonnage and earnings from it passing through Indianapolis eastward to have been as follows since the establishment of the pool:

	Tons.	Earnings.
November.....	44,340½	\$263,936.07
December.....	31,729½	208,907.52
January.....	37,299½	198,371.83
Three months.....	113,369½	\$671,215.42

Of the January shipments 25,427 tons, or 68 per cent., were grain and flour, and 7,822 tons, or 21 per cent., meats and lard.

The percentages to each of the different seaboard cities in each of the three months were:

	Boston		New York		Philadelphia		Baltimore	
	Tons.	P. c.	Tons.	P. c.	Tons.	P. c.	Tons.	P. c.
November.....	11,777½	27.4	18,162½	42.1	7,069½	16.4	6,064	14.1
December.....	7,630	20.5	15,057½	41.0	10,177½	27.7	3,304	9.9
January.....	7,036	18.9	14,640	39.0	4,647	12.5	10,622	28.4
Three months.....	26,443½	22.6	47,859½	40.9	21,894	18.8	20,016½	17.1

The other 0.6 per cent. of the three months' shipments were to interior eastern points.

The fluctuations in the proportions going to Philadelphia and Baltimore are remarkable, but taking the two places together their proportion has varied only from 30.5 per cent. in November to 37.6 in December and 30.9 in January. New York shipments have been comparatively steady.

#### RAILROAD LAW.

##### Attachment of Baggage in Transit.

In the case of Thornton against the Western Railroad Company, in the Georgia Supreme Court, a creditor served on the local agent of a railroad an attachment on two trunks belonging to his debtor and in the train in course of transportation. The Court doubted, on grounds of public policy, whether baggage is subject to such process in the hands of a carrier. But without passing on this point, they quashed the proceedings on the ground that, under the circumstances of the case, the train happened to be out of the state, passing through the border of an adjoining state, at the moment the attachment was served on the agent of the railroad company within the state; and the fact that the train subsequently reentered the state, it was held, did not subject the baggage to the process previously served.

#### THE SCRAP HEAP.

##### Railroad Equipment Notes.

The Harrisburg (Pa.) Car Co. has lately received a contract for 100 gondola cars.

The Lebanon (Pa.) Car Manufacturing Co. has a contract to build a large number of horse cars.

The shops of the Pullman Palace Car Co., at Detroit, are to build four new sleeping coaches for the New York, Lake Erie & Western, and four for the Great Northern road in England.

J. M. Jones & Co., late of West Troy, announce their removal to Schenectady, N. Y., where they have bought the works of the Schenectady Car Co. These are larger, more convenient, better arranged and have better facilities for shipping than their old works at West Troy.

The Hinkley Locomotive Works in Boston recently delivered to the Fitchburg Railroad two Mogul freight engines with 18 by 24 in. cylinders.

The New York, Lake Erie & Western shops at Susquehanna, Pa., have orders to build six new consolidation freight engines, and to make the iron work for 400 box cars.

The car works of John L. Gill, at Columbus, O., are building a train of 40 cars for a traveling circus.

##### Iron and Manufacturing Notes.

The Mansfield Elastic-Frog Company, at New Haven, Conn., has recently forged some very heavy steel blocks, the largest weighing 1,516 lbs., and several others from 800 to 900 lbs. each. They are to be used in making cannon.

Riehle Brothers, of Philadelphia, report orders recently received for patent self-adjusting track scales with rocking blocks and fusey improvement from the Atlantic & Great Western road; also from the Baltimore & Ohio for an iron-frame testing machine for applying tensile, transverse and crushing strains. The testing machine made for the Pennsylvania Railroad has been approved after a careful test by experts, and has been sent to Altoona.

The Girard (Pa.) Iron Co., has its furnace in blast. The Baltimore & Ohio Rolling Mill, at Cumberland, Md., has just put four additional puddling furnaces at work.

Hugh E. Steele & Co., of Coatesville, Pa., have rented the rolling mill at New Castle, Del., from Morris, Tasker & Co., and will soon start it up.

The Riverside Iron Works, at Wheeling, W. Va., have a contract for 80-lb. rails to lay 26 miles of the Weston & West Fork road.

##### Bridge Notes.

Murray, Dougall & Co., of Milton, Pa., recently completed a new iron bridge at Wytheville, Pa.

The Detroit Bridge & Iron Works have completed the north approach of the Glasgow bridge over the Missouri. It consists of two spans of 140 ft. each and an iron trestle.

The Morse Bridge Works, at Youngstown, O., have a contract for a new iron bridge at Warren, O.

##### Spikes.

Perhaps the most flattering testimonial of public confidence in an eminent financier that can be offered by the public is the fact that the announcement that he is interested in the stock of a company causes a sharp decline in its price,

while his retirement is followed by an equally sharp advance.

Broken Heart is the romantic name of a railroad station in Minnesota. But the Southern Pacific will have a much more practical and satisfactory name on its time-table when it reaches the mining town of Fried Liver in Arizona.

A collision on a horse-car line is not generally a serious matter, but in New York the other day a team on the Grand Street & Forty-second Street line ran away and ran into a car coming up on the opposite track. The force of the collision was so great that the front platform was wrecked, and the driver was thrown actually right through the closed front door, injuring him badly.

Meeting to abolish passes: Chairman says, "Gentlemen you know the object of the meeting; you must agree to issue no more free passes."

Chorus of Managers—"What, never?"

Chairman—"Well—hardly ever."

#### The Rogers Locomotive Works.

On the evening of the 13th, one of the buildings of the Rogers Locomotive Works at Paterson, N. J., caught fire in a manner as yet unexplained, and was entirely destroyed. It was a brick building, the older portion of the works, and was used on the first floor as a heavy lathe shop, on the second floor as a light lathe shop, on the third floor as a mill-wright and carpenter shop, and on the fourth floor for the storage of patterns. The machinery in the shops was all destroyed or much damaged, and the spring-shop, a one-story wooden building adjoining, was also burned. The loss is estimated at \$200,000, on which there is \$25,000 insurance. The fire, however, will not interfere seriously with the Works, as it only destroyed one out of the many buildings, and in those left there are all facilities necessary for carrying on the business. The patterns destroyed were all old, none of those now in use being stored in that building. Men have already been put at work clearing out the ruins, and the destroyed building will be replaced at once.

#### Train Wreckers' Sentence.

At Terre Haute, Ind., Feb. 14, two men named Wright and Jackson, on trial for wrecking a train on the Indianapolis & St. Louis road by misplacing a switch, were found guilty. The Court thereupon sentenced them to imprisonment for life.

#### Quick Work.

Engine 323 (New York, Lake Erie & Western) broke her side-rod, main frame, wheel cover, and so forth, at 8:45 last Friday night, and came into the Susquehanna shop at noon the next day (Saturday, the 8th instant). Her frame was taken off and welded, side-rod repaired, driving-boxes and wedges refitted, wheel cover fixed and other slight repairs made, and reported ready for duty at noon the Tuesday following. Total time worked on the engine, 19 hours. —Susquehanna Journal.

#### A Ghost on the Track.

The engineer of the passenger train which arrived here at 5 o'clock yesterday morning, whistled at Kimbro's and stopped the train.

"What's the matter?" asked the brakeman.

"I saw either a white horse or a spook," responded the engineer. "That d—n thing has bothered me several times at this point and I've been wondering what in the — it is. It has run along my engine several times and then turned back toward me. If it's anything at all it has a hole hereabouts and generally runs into it and disappears from sight." Saying this, he pulled the throttle and the train sped on into Nashville. —Nashville (Tenn.) American, Feb. 14.

#### Tramps.

In Jackson, Mich., Feb. 18, a party of 16 tramps took possession of the engine-house of the Fort Wayne, Jackson & Saginaw Railroad and drove out the employees, announcing their intention to have work or die. The police succeeded in capturing the whole gang. After their arrest they claimed that their only intention was to have some fun with the railroad men.

#### Telephones on a Railroad.

A dispatch from Columbus, O., Feb. 17, says: "The Pittsburgh, Cincinnati & St. Louis Railroad has been experimenting since Feb. 1 with the Gray telephone, way duplex, the invention of Elisha Gray, of Chicago, on one of their circuits between this city and Pittsburgh. The success of the system has exceeded their anticipations, and they are now daily transmitting messages over the through side of the circuit, in addition to the way business, without interference to the latter, thus enabling the road to double the capacity of the circuit."

#### OLD AND NEW ROADS.

Atlantic & Great Western.—At Akron, O., Feb. 15, the Court of Common Pleas gave its decision on two important motions made recently. The motion made in behalf of the Receiver for a modification of a former order of the Court instructing him to pay certain certificates held by the United States Rolling Stock Company out of the net earnings of the road was granted, so that payment upon these will not be made till the sale of the road. The counsel for Rolling Stock Company excepted, and an appeal will probably be taken. The motion by the trustees of the Ohio mortgage bonds for the sale and foreclosure of that part of the line in the state of Ohio, and a large portion of the Cleveland & Mahoning lease was overruled.

Atlantic, Mississippi & Ohio.—In Richmond, Va., Feb. 19, a petition was presented by a number of stockholders of the former Virginia & Tennessee Company, asking leave to bring a suit against the Receivers and others, for the purpose of setting aside the sale of the state stock, the consolidation which formed the present company, and the consolidated mortgage, and to have the Virginia & Tennessee Company restored and put in possession of its part of the consolidated line. The Court allowed the petition to be filed, and promised to set a day for hearing.

Boston, Barre & Gardner.—The Worcester (Mass.) Spy says: "Troubles on the Boston, Barre & Gardner road are increasing rapidly. The Boston & Albany road has given notice that it will cease to honor tickets issued by the Boston, Barre & Gardner, and, with other roads, is getting impatient about freight balances. Mr. N. C. Munson has sued the road for \$9,000 for the use of locomotives, and attached the bank deposits of the corporation, which will tend to hasten some kind of settlement of the company's affairs."

It has been reported that negotiations are in progress for the lease of the road to the Cheshire Railroad Company. Such a lease would relieve the Cheshire of some local competition, and give it a connection to Worcester and the south that might be of some value; but the report must be considered doubtful.

Boston & New York Air Line.—The report is confirmed that this road will soon be leased to the New York, New Haven & Hartford Company. It is 50 miles long,



from New Haven, Conn., to Willimantic, where it connects with the New York & New England road.

**Baltimore & Ohio.**—The proposed measures for regulating the business of this company still occupy most of the time of the West Virginia Senate. Another hearing was given last week to Vice-President Keyser, who made a long speech before the committee, setting forth the impracticable nature of the measures and the injury that they would do to the business of the company and the state. He offered evidence to prove that a large part of the company's business in the state was done at less than one-fourth of the rates which its charter authorized it to charge. His speech is said to have been very able and directly to the point.

Latest advices state that the Senate has rejected the *pro rata* bill, which required that local rates should not exceed a *pro rata* share of the through rates. A resolution has been introduced directing the Attorney-General to begin a suit to forfeit the charter of the company.

**Chesapeake & Ohio.**—A statement made to the New York Stock Exchange gives the securities to be issued by the new company as follows:

First preferred stock for overdue interest on 6 per cent. bonds	\$4,097,803
Second preferred stock for overdue interest and one-sixth of principal of 7 per cent. bonds	6,431,615
Common stock for old stock and floating debt	15,600,138
Total stock (\$62.874 per mile)	\$27,035,556
Bonds for Virginia Central prior lien bonds and interest	1,527,578
One, two and three years notes for interest	345,846
Purchase money funding bonds	201,000
New bonds for old 6 per cent. bonds	15,000,000
New bonds for old 7 per cent. bonds	10,122,500
Total bonds (\$63.249 per mile)	\$27,106,924
Total (\$126.122 per mile)	\$54,232,480

Interest on the \$15,000,000 new 6 per cent. bonds is payable for three years wholly in preferred stock, for the fourth year one-half, and the fifth one-third, in stock. Interest on the \$10,122,500 second class 6 per cent. bonds, for six years wholly, for one year two-thirds, and for one year one-third, in preferred stock.

For the last fiscal year, that ending Sept. 30, 1878, the net earnings were \$341,621, or sufficient to pay the interest on the prior lien bonds and the principal of the one-year notes due in July next. This sum, however, was only 1.26 per cent. on the total bonded debt, or 0.63 per cent. on the total stock and debt.

**Chicago & Pacific.**—In making the decree of foreclosure, briefly noted last week, the United States Circuit Court decided as to a number of intervening petitions. In the case of certain mortgages on real estate bought by the company, the Court held that the mortgages were not entitled to be paid from the proceeds of the sale, but that the property should be sold subject to their liens on the lands in question. As to claims for right of way, some were allowed, but others, the Court held, could not be adjudicated or settled now, except by agreement or consent of the parties. Some claims for fuel and supplies were ordered held until after the sale. The claim for building the Killbuck bridge was held a valid prior lien, because the mortgage had never been recorded in the county where the work was done.

**Chicago, Pekin & Southwestern.**—In the United States Circuit Court in Chicago, Feb. 13, an order was entered by agreement remanding the foreclosure suit against this company to the Grundy County (Ill.) Circuit Court, where it originated.

**Cincinnati & Evansville.**—This company has been organized to build a railroad from Evansville, Ind., eastward to Lincoln on the Cincinnati, Rockport & Southwestern road, about 33 miles. The capital stock is to be \$300,000. Part of the route must be very near the Lake Erie, Evansville & Southwestern road.

**Columbus, Jeffersonville & Cincinnati.**—This company will receive proposals for the grading and pile-bridging of the road between Allentown, O., and Mount Sterling, at the office of S. F. Rock, Chief Engineer, in Washington Court House, O., until March 19, or at the office of Dr. S. McClintick, Mount Sterling, O., until March 20. The road is to be of 3-foot gauge. Profiles, specifications, etc., can be seen at the Chief Engineer's office after March 10. Payment is promised monthly, in cash, 15 per cent. to be held until completion of the work. The company is also advertising for 60,000 ties.

**Columbus, Scioto & Hocking Valley.**—At a meeting held in Columbus, O., Feb. 14, it was announced that sufficient stock had been subscribed, and the company was thereupon fully organized by the election of directors and officers. The projected road is from the Scioto Valley at Ashville, O., eastward into the Hocking Valley coal region.

**Connecticut Central.**—This company has a petition before the Connecticut Legislature for authority to make contracts or leases with any of the roads entering Hartford. The object is to make some connection which will enable the road to get into Hartford and make it independent of the Connecticut Valley road. The petition is opposed by the Valley Company.

**Fort Wayne, Jackson & Saginaw.**—At the annual meeting last week the stockholders passed a resolution proposing the issue of preferred stock to bondholders in lieu of their bonds to the amount of the bonds and accrued interest, provided suits for foreclosure should be withdrawn.

**Illinois & St. Louis Bridge.**—The London committee of bondholders report that over 90 per cent. of the bonds have been deposited with them, to join in the reorganization. The sale of the tunnel has been confirmed, and that of the bridge probably will be this month, when the property will be turned over to the new company. The contract with the Union Railroad & Transit Company, which has hitherto done the business over the bridge, will then be terminated, and arrangements have been made to lease the property, including the Union Depot in St. Louis. The contract by which the net earnings of the bridge were pooled with those of the Wiggins Ferry Company is terminated by the sale, and a new contract is nearly concluded for pooling gross, instead of net earnings.

**Indianapolis, Bloomington & Western.**—The bondholders who bought the Western Extension at foreclosure sale have organized the Champaign, Havana & Western Railroad Company. A stockholders' meeting is called for April 30, to authorize the necessary issue of stock and bonds. The articles of incorporation filed include the projected extension of the road to the Mississippi.

It is reported that the bondholders are trying to negotiate a lease of their road to the Illinois Central Company.

**Kansas Railroad Charters.**—The charters of several of the principal Kansas companies, the Atchison, Topeka & Santa Fe, the Leavenworth, Lawrence & Gulf, the Central Branch Union Pacific, the Kansas Pacific, and the Missouri, Kansas & Texas, which were originally granted by the territorial Legislature, expired by limitation of time Feb. 11.

The Legislature has, however, passed the following act to meet the case:

WHEREAS, Doubts have arisen as to the term of duration and existence of divers railroad corporations, chartered by those special acts of the Legislature of the territory of Kansas wherein such term is not specifically fixed, and it is deemed expedient to remove such doubts by appropriate declaratory legislation; therefore

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. The term of the duration and existence of any railroad corporation organized under and by virtue of any of these special acts of the Legislature of the territory of Kansas, wherein the term of such duration and existence is not specifically fixed, and now owning or operating a line of railroad, and who shall, by a vote of the board of directors, at some special or regular meeting thereof hereafter held, signify its acceptance by resolution of the provisions of this act, and shall file a copy of said resolution with and in the office of the Secretary of State of the State of Kansas, on or before the 1st day of June, 1879, shall be held and construed to continue for the term of ninety-nine years from the time of taking effect of the special act under which such railroad corporation was organized, and the change in name of any such corporation made under the provisions of law shall in no wise effect its rights under this act; provided, however, that none of said railroad corporations who shall fail, neglect or refuse to file the adoption of such vote and resolution of this board of directors to accept the provisions of this act by the 1st day of June, 1879, and file the same with the Secretary of State by the time aforesaid shall have any of the benefits of this act whatever. And provided further that nothing in this act shall be construed to affect or abridge the right of the Legislature to regulate fares and tariffs by general laws, and such general laws shall apply to the railroad corporations referred to in this act to the same extent as to railroad corporations organized and existing under general laws, and provided further that in no case whatever shall any railroad corporation whose term of existence is defined and established by this act, exercise, hold or possess any power, immunity, privilege, franchise or right by reason of this act or the provisions herein contained, other or different from those specially enumerated, and ordinary powers, immunities, privileges, franchises and rights exercised, held and possessed by railroad corporations created and incorporated under the general railroad incorporation laws of the State of Kansas.

SEC. 2. This act shall be in force from and after its passage, and the law shall be published in the daily *Blade*, published at Topeka, Kan.

**Madeira & Mamore.**—A New York dispatch of Feb. 17 to the *Philadelphia Times* says: "Information has been received here to-day at the office of the Madeira & Mamore Railway Company of the final appropriation of \$400,000 to aid the construction of the railroad, so long prosecuted by the American contractors under the severest embarrassments. A Rio special dispatch to the *London Times* announces the final action of the Brazilian Government extending its credit to the amount of \$2,000,000 to the enterprise, and the prompt completion of the work is now assured."

**New York Elevated.**—This company has let the contract for the construction of a branch of its East Side road down Thirty-fourth street from Third avenue to the East River, a distance of half a mile. The terminus of the Long Island system of railroads is opposite Thirty-fourth street, and the elevated road will make the suburban towns on those roads much more accessible than heretofore. Connections for Coney Island are made here also.

The company is also completing a third track and two branches (one from its West Side and one from its East Side line) to South Ferry, which is only a few hundred feet south of its present southern terminus. At South Ferry is the landing for two ferries for Brooklyn, two to Staten Island, one to Governor's Island, and boats start thence sometimes for Coney Island.

It is also announced that work is about to begin on the rebuilding of the "old road" on the West Side line. This old road extends from Morris street to Thirtieth street, about three miles, on one side of the street, and was built with very little reference to engineering principles, and will bear, probably, not more than half the safe load which the rest of the structure will carry, compelling the use of light and weak locomotives over the whole of the West Side line—ten miles of track.

Between Fifth and Ninth streets, nearly a quarter of a mile, a third track is being laid, which is to serve for trains to start from going north. At present, after five o'clock for four or five stations above this siding there is very little chance of getting upon a train. The cars arrive crowded and leave crowded without taking on all who are waiting to go up town.

**Northern Transit Co.**—The *Cleveland (O.) Herald* of Feb. 13 says: "By articles of agreement, signed on Monday at Montreal, between the Northern Transit Company, of this city, and the Grand Trunk Railway Company, that line of steamers is to be run wholly in the interests of the latter road during the ensuing season. This will break up the oldest line of steamers on the lakes, which has been running to Ogdensburg since 1849, connecting with the Vermont Central, and leaves no American line through the Welland Canal. Daily lines of freight and passenger boats will ply between Cleveland and Sarnia, and Chicago and Sarnia, and a tri-weekly from Milwaukee and Sheboygan to the same point in Canada. The company employs fifteen steamers and three tow-barges, to which additional barges will be added as the necessities of business may demand. This move has been in contemplation since December last, but was only consummated on Monday, as before mentioned. Mr. P. Chamberlain, the agent of the Northern Transit Company, who conducted the negotiations at Montreal, is expected to return to the city on Thursday. It is thought this new connection will prove a profitable and advantageous one in every respect."

**Norwich & Worcester.**—It is stated that the managers of this company have refused to agree to any modification of the lease to the New York & New England, which will reduce the 10 per cent. dividends now paid on the stock. The New York & New England threatens to surrender the lease unless a reduction is agreed to, but has not yet given the formal notice required to terminate the lease.

**Ohio & Mississippi.**—It is reported that a plan of reconstruction has been agreed upon, the basis of which is the funding of four coupons on the first mortgage and Springfield Division and five or six on the second mortgage bonds. It also provides for the reduction of the \$2,000,000 outstanding Springfield Division bonds from \$2,000,000 to \$1,250,000, the holders consenting on condition that the \$1,000,000 bonds held by the company are canceled.

**Philadelphia & Reading.**—On the 14th some 300 feet in length of the Minehill Branch of this road suddenly sank down, going almost out of sight. The section which caved is directly over the Richardson Colliery, near Mt. Carbon, Pa. Such caves are not uncommon in the coal regions.

**Pittsburgh Southern.**—This company has made arrangements to lay a third rail on the Pittsburgh & Lake Erie road from the crossing of the Little Saw Mill Run road to

the Lake Erie depot, at the east end of the Smithfield street bridge in Pittsburgh. This will enable the Southern road to get about a mile nearer the business centre of the city, and to bring its passengers up to one of the leading thoroughfares, where street-car connections can be made for all parts of the city.

**Portland & Ogdensburg, Vermont Division.**—At St. Johnsbury, Vt., Feb. 17, Chancellor Ross, in the matter of the petition of the Receivers to issue certificates, filed a decree to-day authorizing \$250,000 of such issue for the following purposes: Trestles, \$110,000; ballasting, \$15,000; ties, \$25,000; fencing, \$18,000; iron and retooling, \$25,000; rolling stock, \$27,000; stations and contingencies, \$30,000. The Receivers will proceed immediately to discharge the trusts imposed by their decree and put the road in good condition, said certificates being made as a first lien on the same, its equipment and earnings. The Receivers asked for \$500,000, but probably did not expect to get the whole amount. The bondholders have strongly opposed the issue of certificates, and will probably take an appeal to the Supreme Court.

**Pullman Palace Car Company and Legislation on Sleeping-Car Charges.**—The following letter, dated Feb. 10, 1879, was addressed to the Chairman of the Railroad Committee of the Illinois Legislature by Mr. George M. Pullman, President of the Pullman Palace-Car Company:

"DEAR SIR: My attention has been called to a bill introduced by the Hon. F. K. Granger, authorizing the Railroad and Warehouse Commissioners to regulate the charges in sleeping-cars, and I understand the bill has been referred to your committee.

"I assume that, before acting upon a subject which would seriously affect an important public enterprise, you will consider it desirable to have sufficient data to enable you to do exact justice to both the public and the sleeping-car companies, and to this end I beg to suggest the appointment of a sub-committee, who shall be empowered to make a full investigation of all the matters connected with the operation of sleeping cars.

"If such a committee should be appointed I will take pleasure in affording it every facility for obtaining all the information required to make an intelligent report."

A sub-committee was appointed in accordance with Mr. Pullman's suggestion.

**Raleigh & Seaboard.**—A bill is before the North Carolina Legislature appropriating \$60,000 in aid of this road, on condition that the company return to the State Treasurer the \$150,000 in state bonds voted to the road by the Convention of 1868.

**Rutland.**—At a meeting of bondholders in Boston, Feb. 13, it was resolved to agree to a reduction of interest on the first-mortgage bonds from 8 to 6 per cent., and to fund the equipment bonds in 5 per cent. second-mortgage bonds. These resolutions were only adopted after a long discussion. By the last report there were \$1,250,000 first mortgage and \$1,000,000 equipment bonds outstanding. Default has been made on the equipment bonds. The road is leased to the Central Vermont.

**Sabine Pass & Northwestern.**—Officers of this company report that it now has graded the sections of its road from Lawrence, Tex., to Athens, 51 miles, and from Sabine Pass to Woodville, 85 miles. It also owns the old Rusk tramway, from Jacksonville to Rusk, 17½ miles. The road is to run from Sabine Pass northwest to Denison, 340 miles, crossing the whole extent of Eastern Texas; nearly half of it will be in the timber belt. The contract for the building of the whole line has been let, and arrangements made to raise the money needed by mortgaging the land grant received from the State of Texas, leaving the road itself unencumbered. The contractors have recently shipped the rails for the 17 miles from Sabine Pass to Beaumont, and track-laying will soon begin.

**St. Louis, Kansas City & Northern.**—Notice is given that the bonds of this company, secured by mortgage upon the St. Charles bridge over the Missouri, are now ready to be exchanged for the first-mortgage bonds of the St. Charles Bridge Company, which became due Oct. 1, 1878, according to the resolution adopted at the meeting of bondholders held Oct. 25. The exchange can be made at the National Bank of Commerce, in New York.

**St. Paul & Pacific.**—The *St. Paul Pioneer-Press* of Feb. 16 says: "Messrs. J. J. Hill, R. B. Galusha and George L. Becker returned to St. Paul yesterday from New York, and they confirm the news which has been in private circulation in St. Paul for several days, that the conference in that city between the representatives of the stockholders of the St. Paul & Pacific road and the parties who have lately secured control of the bonded interest on all the lines has resulted in an amicable settlement of all the differences between the two interests. It is known, of course, that since about the year 1864 the stock of the First Division of the St. Paul & Pacific Railroad Company was controlled by the Litchfields, of New York and London. In the complication of differences between these original owners of the road and the bondholders, who held a mortgage upon the whole concern, numerous and vexatious lawsuits sprung up, and as able lawyers were employed on both sides, a final settlement seemed to be a question of the remote future. The recent purchaser of about 80 per cent. of the bonds by the Canadian and St. Paul capitalists, who came into virtual, though not legal, possession of the road upon foreclosure proceedings, and who stood ready to enter into amicable arrangements for an adjustment upon a satisfactory basis of all the matters in dispute, simplified the controversy, and the negotiations have ended to the mutual advantage of all concerned. We are informed that the bondholders have purchased all the stock, bonds and other interests of the Litchfield party, and that the bondholders are thus placed in actual possession of the line. It is understood that all that now remains to be done to brush away every cloud of their title to the ownership of five or six hundred miles of railroad, is a withdrawal of the suits from the courts by consent of the adverse parties, or a formal foreclosure of the mortgage, or such other legal steps as may be deemed necessary to carry out the agreement made in New York within the last few days. The new company will, of course, at once reorganize the management by the election of officers, if it has not done so already; but it is not likely that any of the gentlemen who have so long faithfully and profitably conducted the affairs of the St. Paul & Pacific road will be displaced."

**Scioto Valley.**—At the recent annual meeting in Columbus, O., the President stated that there was a good prospect for the early building of a line to connect the road with the coal fields of the Hocking Valley. There was also a prospect that work would soon be begun on the line from Portsmouth to connect with the Chesapeake & Ohio. The local business had been very good, and there is a large amount of grain along the line to be shipped. Arrangements have been made for some additional equipment, and for an extension from the present terminus in Portsmouth to the Ohio River, so that direct transfers to and from boats can be made.

**Sonoma, Napa Junction & Vallejo.**—This company



is organized to build a railroad from Sonoma, Cal., south-east about 15 miles to a junction with the Napa Valley Branch of the California Pacific.

**Southern Minnesota Extension.**—A La Crosse (Wis.) dispatch says: "It is officially announced that the Southern Minnesota has completed arrangements to build from 40 to 45 miles of railroad beyond Jackson this coming season. The money for this purpose is already provided for. A force of surveyors will be put in the field within 30 days, to run preliminary surveys. The general direction of their lines will be northwest, so as to strike Murray and Pipestone counties, where the company has large quantities of land. One hundred thousand ties have already been contracted for and are being delivered, and the piles for bridges have been purchased. Should the season prove a good one for crops, the company announce their intention to build through to the Dakota line, 85 miles from their present terminus. Notwithstanding the hard times, their net earnings for the past year have been \$311,000. The present length of the road is 216 miles."

**Texas Western.**—This company has, it is said, succeeded in securing a loan which will enable it to clear off its present embarrassments and go on with the work of extending the road westward.

**Union Pacific.**—With regard to reports of the sale of the controlling interest in the stock of this road by Jay Gould, the *American Exchange*, usually well informed as to movements among stock operators, says, in its issue of Feb. 18:

"As far as can be learned, the facts in the matter appear as follows: A syndicate, composed of Messrs. Russell Sage, James Keene, C. G. Osborn, Frank Work, D. P. Morgan, A. J. Cammach, W. L. Scott and David Jones, yesterday morning bought of Mr. Gould, 70,000 shares of Union Pacific stock at about 70. Mr. Sage having previously purchased 30,000 shares, making the total amount now held by the syndicate about 100,000 shares. The transaction will probably be followed by a reorganization of the board of directors of the Union Pacific Company, as at the approaching election there will be three vacancies.—Mr. S. H. Clark, of Omaha, Neb.; Mr. W. A. H. Loveland, of Denver, Col.; and Mr. John Sharp, of Salt Lake City, Utah, going out. A vacancy already exists on account of the death of Mr. Frederick Nickerson, of Boston, formerly a member of the board. It is proposed to elect to the board Mr. James Keene, Mr. Addison J. Cammach and Mr. Solon Humphreys. Mr. Humphreys, if elected, will represent the Missouri Pacific and St. Louis, Kansas City & Northern railroad companies interests in the board. The name of Mr. John J. Cisco is also suggested as a possible director. It cannot be learned positively whether Mr. Jay Gould will retire from the director or not; it is claimed by some persons that he will still take an active part in the management of the Union Pacific commensurate with his position as a large stockholder, he still holding a considerable amount of stock.

"Mr. Gould declined yesterday afternoon to be interviewed on the subject. Mr. Russell Sage last evening, however, confirmed the foregoing statement. He claimed that the Union Pacific road was an improving property, which would be able to earn in the future handsome dividends on its stock. He said that negotiations had been proceeding for about two months for the purpose of bringing about yesterday's transaction, which was a *bona fide* one, resulting from the capitalists composing the syndicate realizing the value of the property in which they had now become directly interested. He stated that Mr. Gould had not taken 50 per cent. of the price agreed upon for the sale in Northwestern stock, as reported. Mr. Gould formerly held a majority of the capital stock of the Union Pacific Company, but he (Mr. Sage) had purchased recently 30,000 shares, and the syndicate had just taken 70,000 more shares. Mr. Gould would still hold about 90,000 shares. He said that ex-Gov. Morgan, Mr. F. A. Palmer, President of the Broadway National Bank, and Mr. James Buell, President of the Importers' and Traders' Bank, had been suggested for the reorganized directorate of the Union Pacific, in addition to the names of Mr. Humphreys and Mr. Cisco. Mr. Sage could not state, however, whether Mr. Gould would resign from the board or not.

"Mr. A. J. Cammach also confirmed the statement of the transaction as given above. He said that he interested himself in the position of the Union Pacific stock some time ago. He told Mr. Gould that the stock would be stronger and of more value if it were distributed among a number of capitalists; its concentration in the hands of one person invited attack. Mr. Gould had talked of retiring from business, and of going to Europe for private and family reasons, for some time past. Mr. Cammach denied positively that Mr. Gould had received any Northwest stock in payment from the syndicate, and he asserted that the transaction was on a cash basis. Mr. Gould did not owe a dollar on his stock at the time of the conclusion of the arrangement, nor had he owed anything upon it for some time previous to yesterday's transaction. Mr. Cammach could not say that Mr. Gould would retire from the directorate of the Union Pacific; he did not know whether his retirement was a condition of the sale or not, as he was not present yesterday morning when the transaction was closed. 'However,' he said, 'if Mr. Gould does resign from the board, it will be voluntarily and at his own instance, as he himself proposed his retirement to the syndicate.' In conclusion Mr. Cammach said that Mr. Gould, by reason of his selling such a large amount of his stock, would lose the absolute control of the Union Pacific property, which would now be managed by a more widely diffused interest."

**Weston & West Fork.**—This company has contracted with the Riverside Iron Works, of Wheeling, W. Va., for 30-lb. iron rails enough to lay the 26 miles of its road from the Baltimore & Ohio at Clarksburg, W. Va., to Weston. Track-laying will begin as soon as the necessary sidings and connection can be laid at Clarksburg.

## ANNUAL REPORTS.

### Illinois Central.

This company owns the Chicago Division from Chicago to Cairo, 364.73 miles, and the Northern Division, from Centralia, Ill., to Dubuque, Ia., 340.77 miles, 705.5 miles owned. It leases and practically owns the Chicago & Springfield road (Springfield Division), from Gilman, Ill., to Springfield, 111.5 miles, and the Kankakee & Southwestern (Chatsworth Division), from Otto, Ill., to Chatsworth, 36.76 miles. It leases in Iowa the Dubuque & Sioux City, 142.89 miles and the Iowa Falls & Sioux City, 183.69 miles, which together form a line from Dubuque to Sioux City, and the Cedar Falls & Minnesota, 75.58 miles, making 1,255.92 miles worked, of which 853.76 miles are in Illinois, and 402.16 miles in Iowa. The Springfield Division appears in the accounts for the first time last year, while the Chatsworth Division was built last fall and worked but two months of the year.

The directors' report for the year 1878 and the general balance sheet have already been published (page 53, number for Jan. 24), and the reports of the other officers are now issued.

The equipment consists of 212 engines; 18 sleeping, 81 passenger, 8 smoking, 56 baggage, mail and express, and 10 old passenger cars; 2,958 box and combination, 481 stock, 4 powder and 1,451 coal and flat cars; 2 officers', 1 pay and 17 service cars. During the year 275 freight cars were sold to the Chicago, St. Louis & New Orleans road.

The Land Department reports sales of 8,261.91 acres for \$58,036.94, and town lots for \$800. There were also 50 acres of purchased land sold for \$1,280. The total cash receipts on land contracts were \$88,634.34. There are on hand bills receivable and land contracts amounting to \$431,153.60; there are still 290,348.04 acres unsold, nearly all in Southern Illinois, 202,916.26 acres being south of the Ohio & Mississippi road, and only 4,573.48 acres north of Toluono on the Chicago Division or Decatur on the Northern Division. Land Department expenses, fares refunded, etc., for the year amounted to \$24,515.89.

The earnings of the entire system for the year were as follows:

	1878.	1877.	Inc. or Dec.	P. c.
Freight.....	\$5,021,376.67	\$4,555,405.68	I. \$465,970.99	10.2
Passengers.....	1,388,240.56	1,440,974.05	D. 52,733.49	3.7
Mail.....	130,422.08	129,157.64	I. 1,264.44	0.9
Express.....	133,441.24	131,332.34	I. 2,108.90	1.6
Sleeping cars.....	30,257.95	31,326.23	D. 1,068.28	3.4
Rent of property.....	73,373.51	68,087.07	I. 5,286.44	6.4
Rent of trucks.....	151,711.72	132,328.32	I. 19,383.40	14.7
Storage and dockage.....	10,331.37	4,339.49	I. 5,991.88	13.9
Switching.....	44,728.33	33,442.03	I. 11,286.30	33.8
Telegraph.....	948.92	1,037.94	D. 89.02	9.4
Train Men Acs.....	4,200.00	4,840.90	D. 640.90	15.1
Cairo whf. boat transfer.....	3,905.42	4,440.17	D. 534.75	13.7
Mileage of cars and engines.....	57,690.32	52,577.39	I. 5,112.93	10.0
Total.....	\$7,140,297.94	\$6,983,322.04	I. \$156,975.90	2.2
Working expenses.....	3,087,435.37	3,122,443.14	D. 35,007.77	1.1
Net earnings.....	\$4,052,862.57	\$3,860,878.90	I. \$191,983.67	4.9
Per ct. of exps.....	43.24	45.72	D. 2.48	5.7

The earnings of 1878 were divided as follows, the statement differing from that above in the deduction of \$29,023.66 from the gross earnings, for cost of freight business done over the Toledo, Peoria & Warsaw:

Gross earnings of line owned (\$6,524 per mile).....	\$4,602,343.62
Net earnings over C., B., & Q. and C. & N. W.....	498,993.53
Net earnings over T., P. & W.....	29,023.66
Earnings over other lines.....	94,904.09
Cairo wharf-boat and transfer.....	61,301.74
Springfield Division (\$2,457 per mile).....	274,009.55
Chatsworth Div., two months (\$328 per mile).....	12,049.61

Total in Illinois.....	\$5,572,025.80
Dubuque & Sioux City (\$6,482 per mile).....	926,170.77
Iowa Falls & Sioux City (\$2,593 per mile).....	476,265.08
Cedar Falls & Minnesota (\$1,803 per mile).....	136,122.63
Total.....	\$7,111,184.28
Expenses.....	3,087,435.37
Net earnings.....	\$4,023,748.91

Charter tax to State of Illinois.....	\$320,431.71
Taxes, Chl. & Springfield R. R.....	10,001.23
Taxes, leased lines in Iowa.....	61,750.78
Rental.....	616,320.00
Total.....	1,008,519.72
Net balance.....	\$3,015,229.19

The income account is as follows:

Net balance, as above.....	\$3,015,229.19
Land Office receipts.....	64,118.45
Interest collected on bonds of New Orleans line.....	68,040.00
Total.....	\$3,147,387.64
Interest on bonds.....	\$691,182.91
Dividends, 6 per cent.....	1,740,000.00
Balance construction account in Illinois.....	38,728.64
Sundry expenditures, New York office.....	41,943.98
Total.....	2,481,855.53

Balance of income for 1878.....	\$665,532.11
Balance at credit, Dec. 31, 1877.....	790,103.19
Balance of income account.....	\$1,455,635.40

The work done for the year was as follows:

	1878.	1877.	Inc. or Dec.	P. c.
Train mileage.....	1,523,446	1,449,542	I. 73,904	5.1
Passenger.....	2,724,182	2,558,095	I. 166,087	6.5
Freight.....	94,878	37,510	I. 57,368	155.0
Service.....	778,153	705,111	I. 73,042	10.4
Total.....	5,120,659	4,810,858	I. 309,801	6.4
Passengers carried.....	1,725,236	1,711,398	I. 13,838	0.8
Passenger mileage.....	43,840,207	46,076,845	D. 2,237,638	4.8
Tons freight carried.....	2,067,832	1,803,044	I. 264,788	14.7
Tonnage mileage.....	144,071,320	124,716,539	I. 19,354,781	15.5
Tonnage mileage, southward.....	162,274,371	124,829,412	I. 37,444,959	30.2
Total.....	309,345,691	249,345,941	I. 59,999,750	22.9

Av. train load:				
Passengers, No.....	28.78	31.79	D. 3.01	9.5
Freight, tons.....	112.45	97.45	I. 15.00	15.4
Av. number of cars hauled.....	11.55	11.38	I. 0.17	1.5

The cost of locomotive service per mile run was: 1878, 15.29 cents; 1877, 17.21 cents; decrease, 1.92 cents, or 12.6 per cent.

There was some decrease in passenger rates. The average rates per ton per mile were:

	1878.	1877.	Decrease.	P. c.
On north-bound freight.....	1.50 cts.	1.76 cts.	0.26 ct.	11.4
On south-bound freight.....	1.72 "	1.89 "	0.17 "	9.0
On local freight.....	1.73 "	1.96 "	0.23 "	11.7
On through freight.....	1.17 "	1.26 "	0.09 "	7.9
Average of all.....	1.64 "	1.83 "	0.19 "	10.4

There was a decrease in rates on all classes of freight, which partly offset the increase in tonnage. Local freight was 87 per cent. of the total tonnage, against 84 per cent. in 1877.

Some averages of traffic were as follows:

	1878.	1877.	Inc. or Dec.	P. c.
Per mile of road:				
Gross earnings.....	\$5,685.38	\$6,033.73	D. \$348.35	5.8
Net earnings.....	3,227.01	3,214.78	I. 12.23	0.4
Train mileage.....	4,189	4,342	D. 153	3.5
Passenger mileage.....	35,825	41,589	D. 5,764	13.8
Tonnage mileage.....	250,041	225,041	I. 25,000	11.2

Repair of sleeping cars cost 1.00 cents per mile run; passenger cars, 1.16 cents, and freight cars, 0.29 cent.

The tonnage received at Chicago was 802,719 tons; forwarded from Chicago, 309,340 tons, against 567,928 tons received and 839,965 tons forwarded in 1877.

Road improvements included a new iron bridge over Galena River; several smaller iron bridges; 2,365 miles new sidings, and 40.94 miles of track ballasted. The bridges in Iowa are being renewed on an improved plan; 2,401 lineal feet were built during the year. In Illinois 1,522 feet of new bridging were built, besides 797 feet of trestle in place

of a bridge and bank washed out. Track renewals required 8,752.20 tons steel rails, 210.58 tons iron rails and 268,582 new ties. There are now 466.17 miles of track laid with steel. The shops and yard at Clinton were enlarged and improved and that place made the dividing point for locomotive runs, instead of Wapella, the change accommodating the Springfield Division also.

The 36.76 miles of the Kankakee & Southwestern road had cost up to the close of the year \$204,045.82, or \$5,551 per mile. It is all done except the ballasting.

### Dayton & Southeastern.

This company works a road of 3 ft. gauge from Dayton, O., southeast to Musselman's, on the Marietta & Cincinnati, 69.7 miles. Since Aug. 9 it has been in the hands of a receiver, but the company presents a report for the year ending Dec. 31, 1878. The road was finished to Musselman's Oct. 29, 1877, but shorter sections had previously been operated.

The Receiver was appointed on petition of some of the bondholders, in order to protect their interest. It is not expected that there will be a foreclosure, but it is believed that the Receiver can work off the floating debt and leave the road able to pay interest.

The general balance sheet is as follows:

Stock paid in (\$6,568 per mile).....	\$457,817.06
Bonds (\$5,933 per mile).....	413,500.00
Floating debt.....	107,735.55
Income and Receiver's payments.....	21,973.48
Total (\$14,743 per mile).....	\$1,001,026.09

Construction (\$14,039 per mile).....\$953,252.25

Accrued interest and balances.....47,773.84

1,001,026.09

In addition to the above floating debt there are \$14,397.12 in claims not yet audited. The accounts show an increase in construction account of \$93,473.70; increase in interest and discount on bonds, chargeable to construction, \$37,275.41, and a decrease in other debit accounts, \$6,401.03. They also show an increase in paid-up subscriptions to the capital stock, \$14,969.48; increase in bonds issued, \$126,900, and decrease in floating debt, \$29,167.12.

The earnings for the year were as follows:

Passengers.....	\$31,031.69
Freight.....	42,874.20
Mail, etc.....	8,044.53
Total (\$1,206.93 per mile).....	\$81,950.42

Working expenses (64 per cent.).....\$52,542.32

Taxes, rents, etc. (6 per cent.).....4,808.19

57,350.51

Net earnings (\$302.30 per mile).....\$24,599.91

Accrued interest for the year was \$28,147, or \$3,547.09 more than the net earnings.

Since August, when the Receiver was appointed, the earnings have increased, owing to good crops and to coal traffic received from the Springfield, Jackson & Pomeroy. The supply of coal from this source, however, is not very reliable, and the extension of the road to the coal fields is strongly urged. An increased business is looked for this year, even without the extension.

### Worcester & Nashua.

This company owns a line from Worcester, Mass., to Nashua, N. H., 45.69 miles, and it leases the Nashua & Rochester, which extends the line to Rochester, 48.81 miles, making 94.50 miles worked. On the line owned there are 16.83 miles second track and 18.79 miles of sidings. The report is for the year ending Sept. 30, 1878.

The equipment consists of 20 engines and 3 snow-plows; 3 parlor, 19 passenger and 7 mail and baggage cars; 238 box, 100 platform and 100 coal and gravel cars.

The general account is as follows:

Stock (\$39,173 per mile).....	\$1,789,800.00
Bonds (\$21,887 per mile).....	1,000,000.00
Bills and accounts payable.....	117,023.84
Profit and loss.....	229,766.98
Total.....	\$3,136,590.82

Road and equipment (\$35,298 per mile).....2,529,505.74

Nashua & Rochester stock.....475,300.00

Cash, materials and receivables.....134,725.08

3,136,590.82

The work done for the year is reported as follows:

	1877-78.	1876-77.	Inc. or Dec.	P. c.
Train mileage.....	187,778	179,777	I. 8,001	4.5
Passenger.....	187,808	209,769	D. 22,161	10.6
Freight.....	155,147	158,555	D. 3,408	2.1
Service.....	35,877	12,025	I. 23,852	198.8
Total.....	378,632	380,349	D. 1,717	0.5
Passengers carried.....	325,977	336,354	D. 10,377	3.1
Tons freight carried.....	313,962	315,267	D. 1,305	0.4

The earnings and expenses for the year were as follows:

	1877-78.	1876-77.	Inc. or Dec.	P. c.
Passenger depart-ment.....	\$194,088.61	\$208,941.17	D. \$14,852.56	7.1
Freight department.....	270,151.72	288,297.97	D. 18,146.25	3.2
Rents.....	6,638.42	5,784.70	I. 853.72	14.7
Dividends.....	28,518.00	25,860.00	I. 2,658.00	10.3
Total.....	\$508,396.75	\$528,883.84	D. \$20,487.09	3.9
Expenses.....	304,888.73	339,979.23	D. 35,090.50	10.3

Net earnings.....\$203,508.02

Gross earn. per mile.....5,379.86

Net.....2,153.52

Per cent. of exps.....59.97

The net income from the Nashua & Rochester road was \$49,531.37; the net income on business from that road coming to the Worcester & Nashua was \$13,661.54.

Payments from net income were:

Net earnings.....	\$203,508.02
Interest paid.....	\$71,341.03
Rent of Nashua & Rochester road.....	120,448.00
Surplus to profit and loss.....	\$11,718.99

The report says: "The road-bed and track from Worcester to Rochester have been kept in thorough repair, requiring 684 tons of new iron rails, and 20,743 new cross ties, and the entire line is now in excellent condition. A new bridge, 160 feet in length, over the Nashua River in Harvard, has been built, and all the other bridges have been examined, repaired and made as strong as when originally constructed. The rolling stock has also received our special attention, that no depreciation in its efficiency for the business of the road should be permitted.

"The station buildings at Lancaster, Groton and Nashua have undergone extensive repairs and alterations, which could not be delayed longer, with due regard to the interests of the company and the traveling public.

"All expenditures incurred for repairs of buildings, constructing and repairing bridges, maintenance of way, additions to and repairs of rolling stock and other necessary expenses have been paid from the earnings of the road, and charged to expense account. No change has been made in the construction account during the past year.

"The passenger trains have been run regularly, without accident to passengers or interruption from causes beyond our control."